ORDER NO. EMID861149

Service Manual

Electronic Organ

SX-EX60

Cabinet Colour

K..................Black Face

(EN), (EI), (EH), (EB), (EF), (EZ), (EW), (EL), (EP),
(EK), (MC), (XT), (XL), (XR), (XS), (X), (XX), (XV)

AREAS

(EN):	Norway, Sweden, Denmark	(MC):	Canada
(EI):	Italy	(XT):	Taiwan
(EH):	Holland	(XL):	New Zealand
(EB):	Belgium	(XR):	Australia
(EF):	France, Austria	(XS):	Malaysia, Singapore, South Africa
(EZ):	Germany	(X):	the Middle East, Hong Kong, the Philippines, Indonesia
(EW):	Switzerland	(XX):	Peru, Chile
(EL):	Finland	(XV):	Venezuela, Ecuador, Panama
(EP):	Spain		
(EK):	the United Kingdom		

Specifications

keyboard		manual 44 keys, lower manual 44 keys, pedal keyboard 13 keys
one touch play		on
fullband setting computer		fullband setting computer, record*, [1]~[5] (lower keyboard)
play sequencer		bass, lower, upper, solo, record*
voice setting computer		set, 1~7, cancel, 20 combination VSC (lower keyboard)
tone selector		orchestral conductor (upper...5, lower...5)
upper tones	tab voices	flute 16′, 8′, 5-1/3′, 4′, 2-2/3′, 2′, 1-1/3′, 1′, string 8′, 4′, volume
	(percussive tone)	5-1/3′, 4′, 2-2/3′, 2′, click, long, volume
	(harmonic coupler)	2-2/3′ (program), record*
	string ensemble	volume
	percussive presets	piano, electric piano, harpsichord, vibraphone, guitar, banjo, volume
	orchestral presets	trombone, saxophone, accordion, clarinet, wah brass, synthe brass, volume
	solo presets	trombone, saxophone, trumpet, clarinet, flute, pan flute, synthe I, II, volume
lower tones	tab voices	flute 8′, 4′, 2′ string 8′, 4′, volume
	(harmonic coupler)	2′ (program), record*
	string ensemble	volume
	percussive presets	○ (U/L)
	orchestral presets	○ (U/L)
	solo presets	○ (U/L)
bass tones		bass 16′, 8′, 16′ +8′, acoustic bass, electric bass, synthe bass, tuba, volume
effects	pedal to lower	○
	sustain	(upper) on, control; (percussive presets) on, control; (lower) on, control; (bass) control
	slow attack	○
	multi-tremolo	U tab voices, L tab voices, slow/fast

effects	celeste	U tab voices, L tab voices, solo presets, orchestral presets
	reverb	○
	glide	foot switch
techni-chord		on, close/open (program), record*
drum percussion	(selectors)	march, shuffle, swing I, II, 8 beat, funk rock, 16 beat, samba rock, ballad, swing rock, disco I, II, rhumba, guaracha, bossa nova I, II, mambo, cha-cha, samba, baion, waltz, tango, jazz waltz
	(controls)	on, mellow, drum vari, synchro & break, start/stop, volume, foot switch, glide/rhythm
tempo set		I, II, manual, fine, tempo, record*
arrange percussion		I, II, III
intro & ending		on, vari
fill in		I, II, solo
rhythmic orchestra		rhythmic, melodic, I/II, volume
auto play chord		fingered, memory, cancel
program chord computer		PCC, cancel, record*, ⊢𝄞—, ◄, ►, ⊢⌒⊣, ⊢⌒—⊣, ⊢—⊢⊣, 𝄋 𝄌, D.S., —𝄂, ⊂⊃, ⊣ ⊢,, (lower keyboard)
program rhythm computer		composer I, II, III, rhythm sequencer on, record*, clear, beat, 2nd bar, triplet, accent/pitch, I, II, III, 1~16, ⊢𝄞—, ◄, ►, ⊢⌒⊣, ⊢⌒—⊣, ⊢—⊢⊣, 𝄋 𝄌, D.S.., —𝄂, ⊂⊃, ⊢⟳⊣, ⊣ ⊢, (lower keyboard)
transpose		control (G~C~F#)
tuning		free set, +, −
musical display		○
program function switches		foot switch, record*
MIDI		set, clock int/MIDI, start/stop, program change, effect, sustain, part select (bass, lower, upper, solo), MIDI terminals (in, out)
others		power switch, main volume, expression pedal, headphone jack, input jack, output jack, microphone jack (with volume), ext I/O (FD) terminal, initial (lower keyboard), digital memory pack slot

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

output	100W
speakers	30cm (11-13/16")×1, 20cm (7-7/8")×1, 6.5cm (2-9/16")×2
power requirement	250W, 300VA (Canada)
	AC 120/220/240V 50/60Hz AC 120V 60Hz-North America, Taiwan AC 220V 50/60Hz-Europe (except for England)

cabinet (W×H×D)	111.4cm×99.9cm×58.9cm (43-27/32"×39-11/32"×23-3/16")
net weight without bench	67kg (147.7 lbs.)
• Common "**Record**" switch is used for these switches. • Specifications subject to change without notice.	

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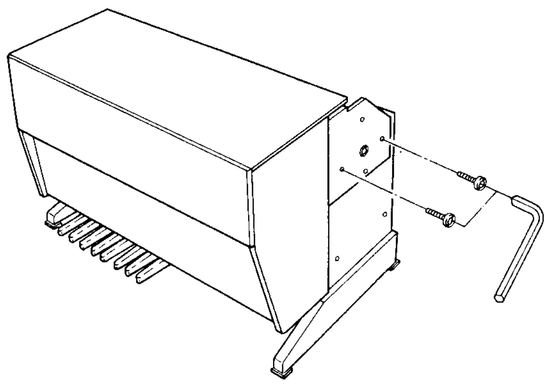
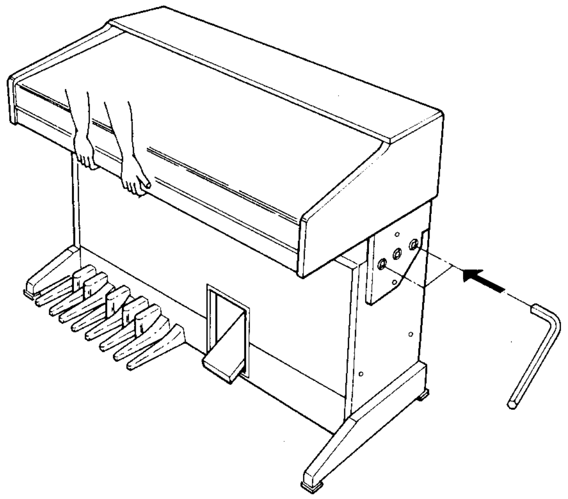
HOW TO ASSEMBLE THE ORGAN

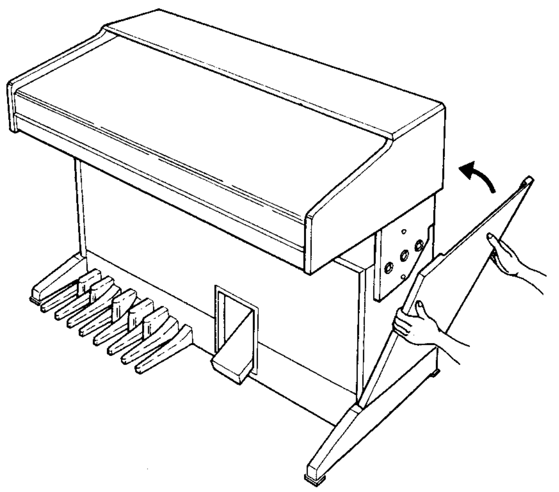
1. Remove the red screws using the supplied wrench.
2. Holding the upper cabinet section, lift it into position and tighten the red screws firmly.
3. Hold each side panels with both hands and install the side panel on the side board of cabinet.
4. Set the music rack on the top cover.
   Unlock the sliding cover with the accessory key.



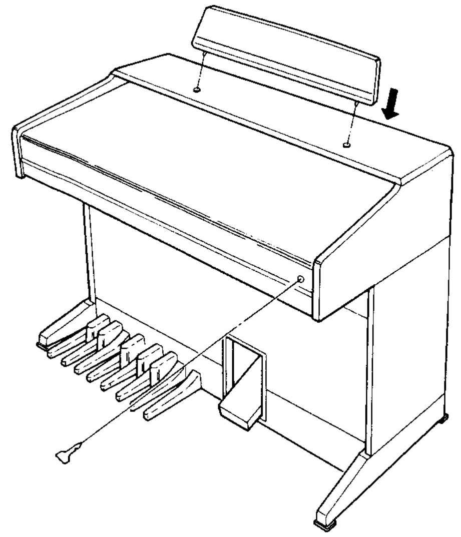
[Fig.-1]



[Fig.-2]

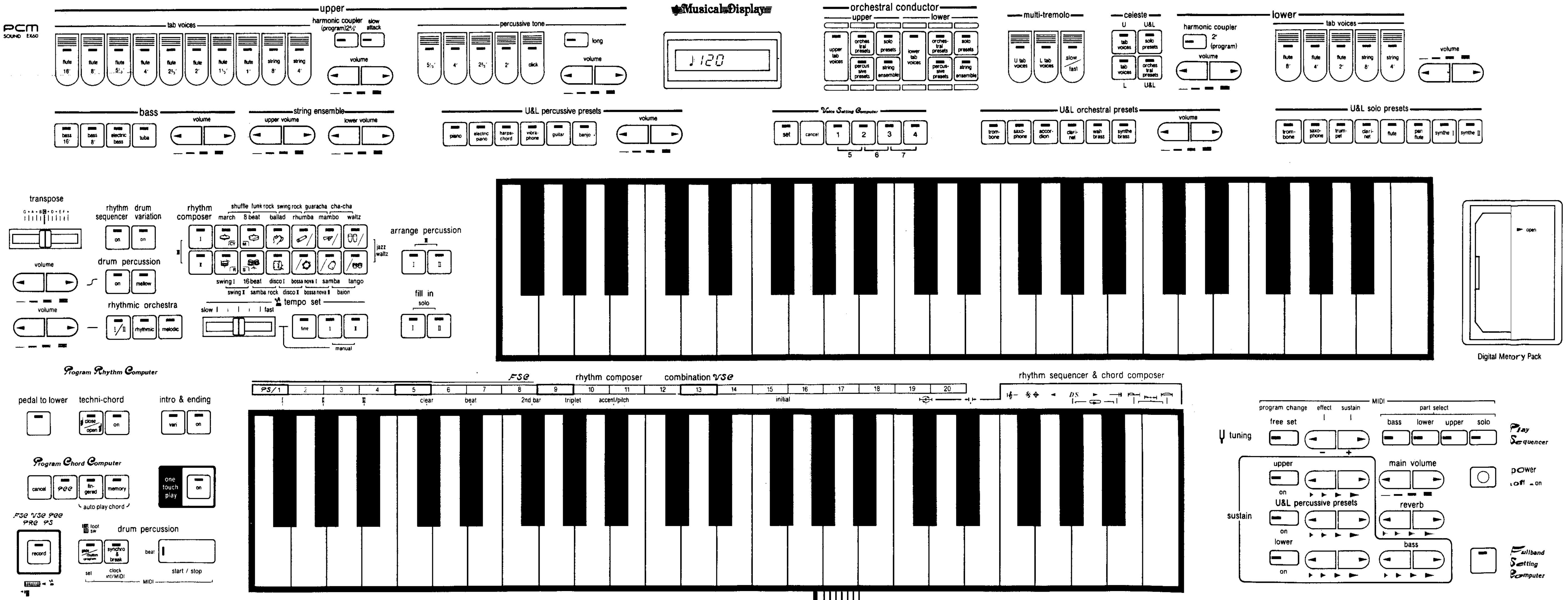


[Fig.-3]



[Fig.-4]

ARRANGEMENT OF CONTROL PANEL


PCM SOUND EX60
upper
tab voices
flute 16'
flute 8'
flute 5⅓'
flute 4'
flute 2⅔'
flute 2'
flute 1⅗'
flute 1'
string 8'
string 4'
harmonic coupler (program)2⅔'
slow attack
volume
percussive tone
5⅓'
4'
2⅔'
2'
click
long
Musical Display
♪120
orchestral conductor
upper
lower
upper tab voices
orchestral presets
solo presets
percussive presets
string ensemble
lower tab voices
multi-tremolo
U tab voices
L tab voices
slow fast
celeste
U
U&L
L
harmonic coupler
2' (program)
lower
bass
bass 16'
bass 8'
electric bass
tuba
string ensemble
upper volume
lower volume
U&L percussive presets
piano
electric piano
harpsichord
vibraphone
guitar
banjo
Voice Setting Computer
set
cancel
1
2
3
4
5
6
7
U&L orchestral presets
trombone
saxophone
accordion
clarinet
wah brass
synthe brass
U&L solo presets
trumpet
flute
pan flute
synthe I
synthe II
transpose
rhythm sequencer
drum variation
rhythm composer
shuffle
funk rock
swing rock
guaracha
cha-cha
march
8 beat
ballad
rhumba
mambo
waltz
jazz waltz
swing I
16 beat
disco I
bossa nova I
samba
tango
swing II
samba rock
disco II
bossa nova II
baion
drum percussion
on
mellow
rhythmic orchestra
rhythmic
melodic
tempo set
slow
fast
tune
manual
arrange percussion
fill in
solo
Digital Memory Pack
open
Program Rhythm Computer
pedal to lower
techni-chord
close
open
intro & ending
vari
Program Chord Computer
cancel
PCC
fingered
memory
auto play chord
one touch play
FSC VSC PCC PRC PS
record
foot sw
drum percussion
synchro & break
beat
set
clock int/MIDI
start / stop
MIDI
FSC
rhythm composer
combination VSC
PS/1
clear
beat
2nd bar
triplet
accent/pitch
initial
rhythm sequencer & chord composer
DS
MIDI
program change
effect
sustain
part select
free set
bass
lower
upper
solo
tuning
Play Sequencer
upper
main volume
power
off
on
U&L percussive presets
sustain
reverb
lower
bass
Fullband Setting Computer

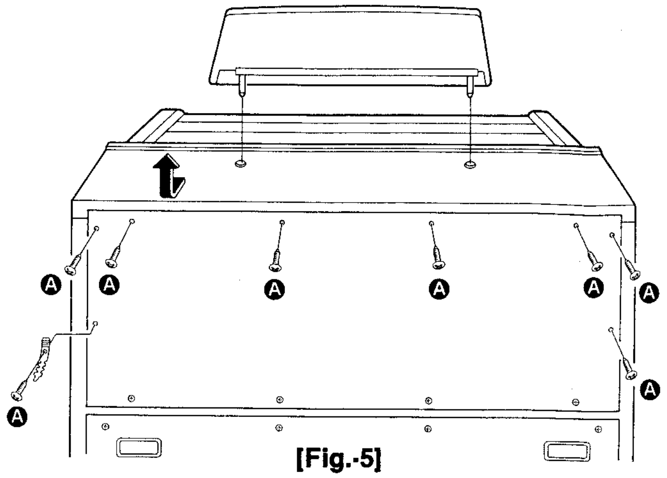
DISASSEMBLY INSTRUCTIONS

1. Music Rack (Fig.-5)

a) Music rack can be removed upward.

2. Top Cover (Fig.-5)

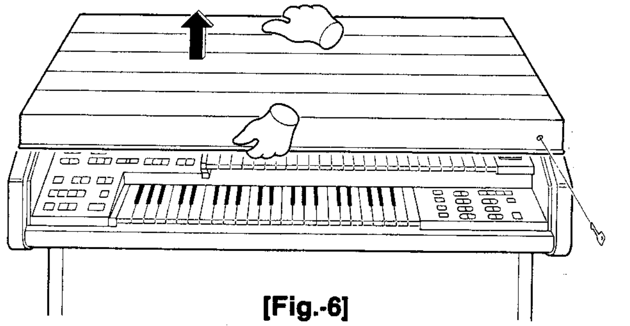
a) Remove the 8 screws Ⓐ located on the rear board.
b) Remove the top cover, slide it backward and lift.



[Fig.-5]

3. Silding Cover (Fig.-6)

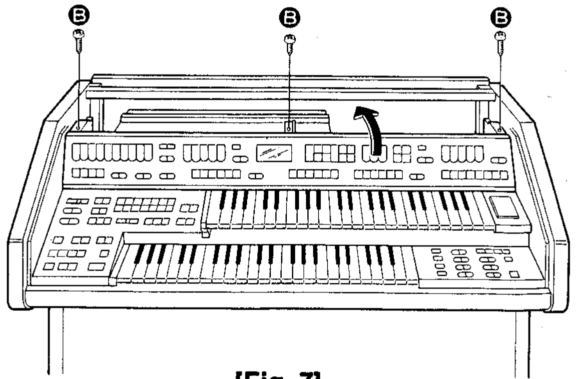
a) Unlock the sliding cover with the accessory key.
b) After removing the top cover, remove the sliding cover in its fully-closed position.



[Fig.-6]

4. Upper Control Panel (Fig.-7)

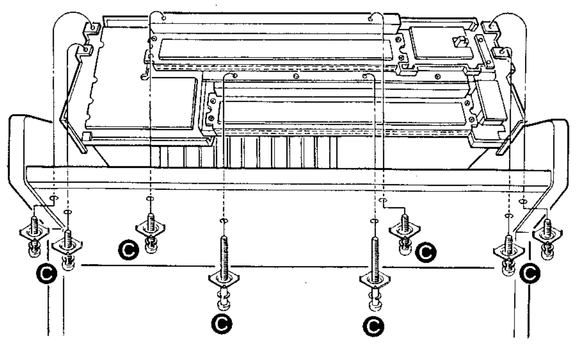
a) Remove both top cover and sliding cover according to steps 2 and 3.
b) Remove the 3 red screws Ⓑ which fasten the upper control panel.
c) Then the upper control panel can be opened upwards.



[Fig.-7]

5. Keyboard & End Cover Unit (Fig.-8)

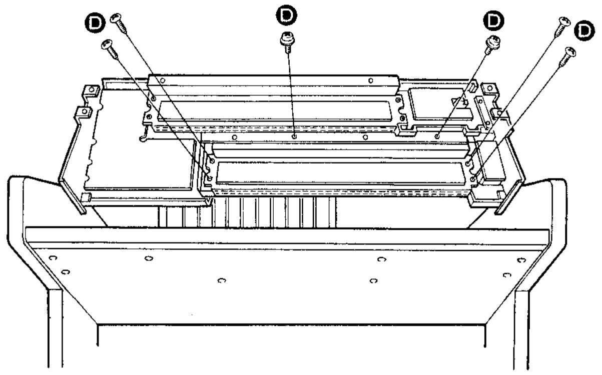
a) Open the control panel according to step 4.
b) Remove the 8 screws Ⓒ on the bottom of the self-board.
c) Then the keyboard & end cover unit can be opened upwards.



[Fig.-8]

6. Upper Keyboard (Fig.-9)

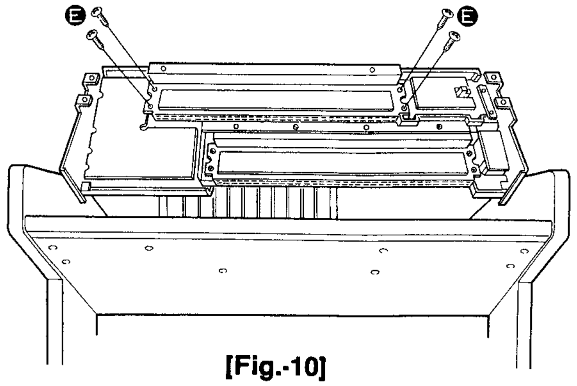
a) Open the keyboard & end cover unit according to step 5.
b) Remove the 6 screws Ⓓ which fasten the upper keyboard chassis.
c) Then the upper keyboard can be removed.



[Fig.-9]

7. Lower Keyboard (Fig.-10)

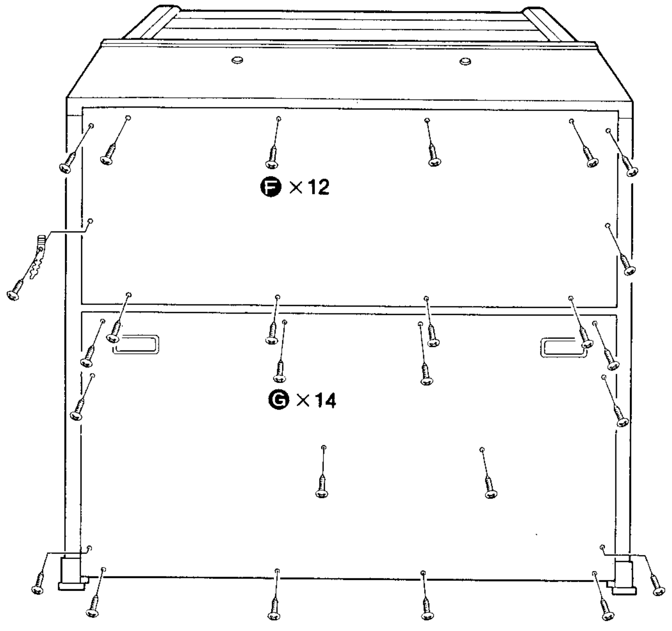
a) Open the keyboard & end cover unit according to step 5.
b) Remove the 4 screws Ⓔ which fasten the lower keyboard chassis.
c) Then the lower keyboard can be removed.



[Fig.-10]

8. Rear Board (Fig.-11)

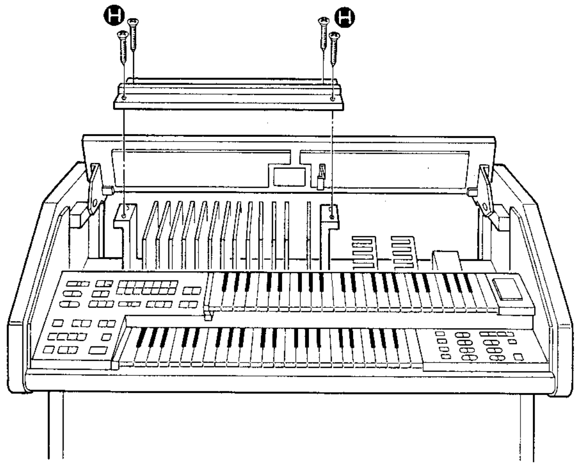
a) Upper cabinet section
Remove the 12 screws Ⓕ on the rear board.
b) Lower cabinet section
Remove the 14 screws Ⓖ on the rear board.



[Fig.-11]

9. Printed Circuit Board (Mother Board Block) (Fig.-12)

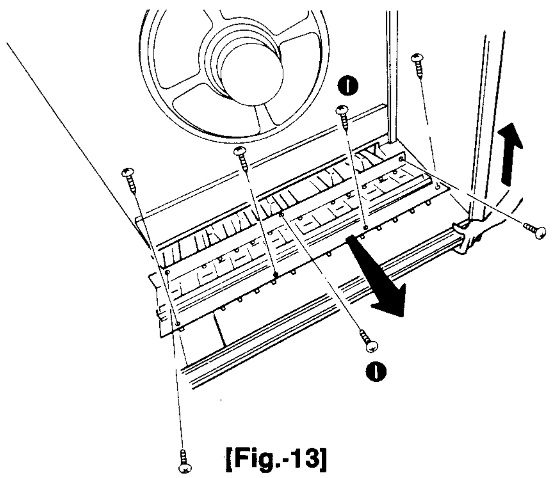
a) Open the control panel according to step 4.
b) Remove the 4 screws Ⓗ on the printed circuit board retainer plate.
c) Each printed circuit board can be removed from the connector of the mother board.



[Fig.-12]

10. Pedal Keyboard (Fig.-13)

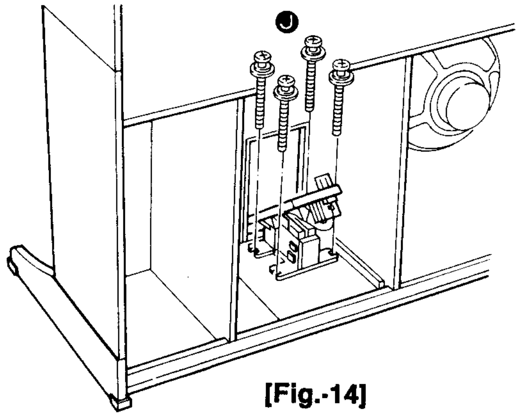
a) Remove the rear board of the lower cabinet.
b) Remove the 7 screws Ⓘ which fasten the pedal keyboard chassis.
c) Lift the cabinet body, and remove the pedal keyboard from the bottom plate of the cabinet.



[Fig.-13]

11. Expression Unit (Fig.-14)

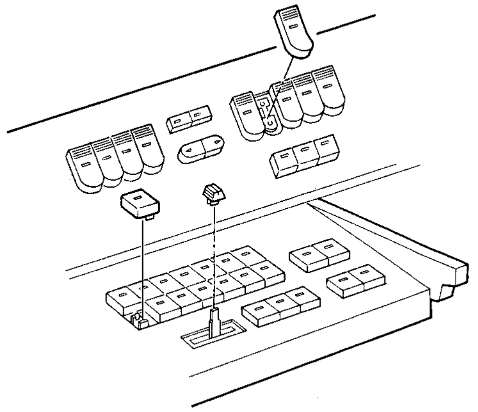
a) Remove the rear board of the lower cabinet.
b) Remove the 4 screws Ⓙ which fasten the expression unit.
c) The expression unit can be removed.
d) When replacing the expression lamp, remove the lamp retainer rubber and detach the lamp from the socket.



[Fig.-14]

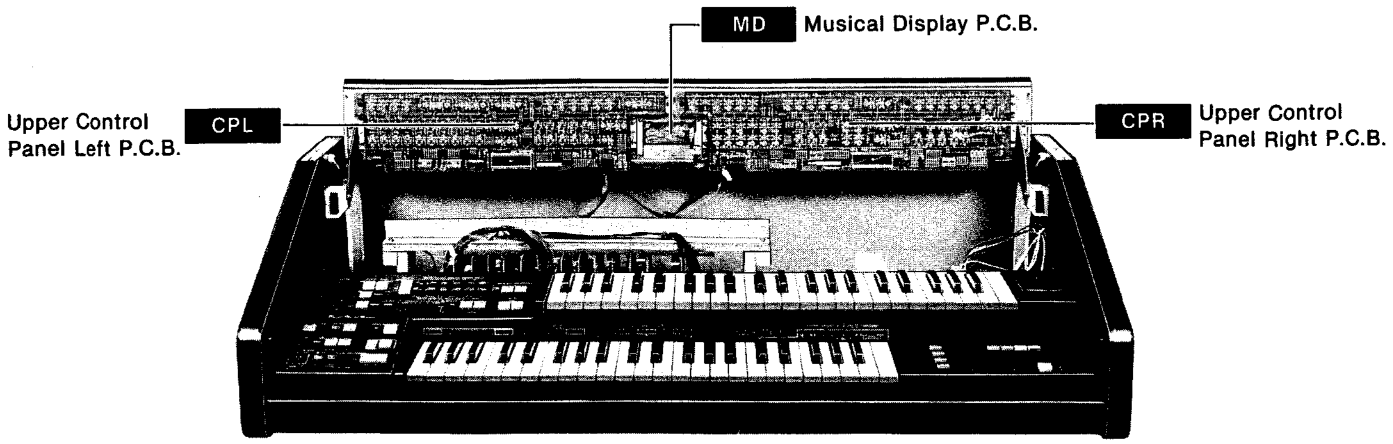
12. Buttons and Knobs (Fig.-15)

a) All buttons and knobs can be pulled out.

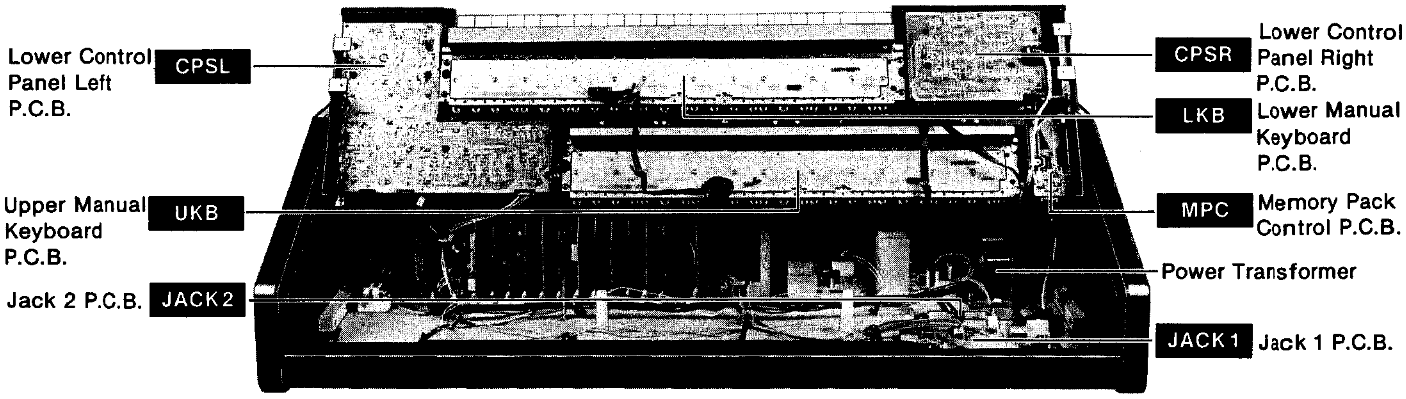


[Fig.-15]

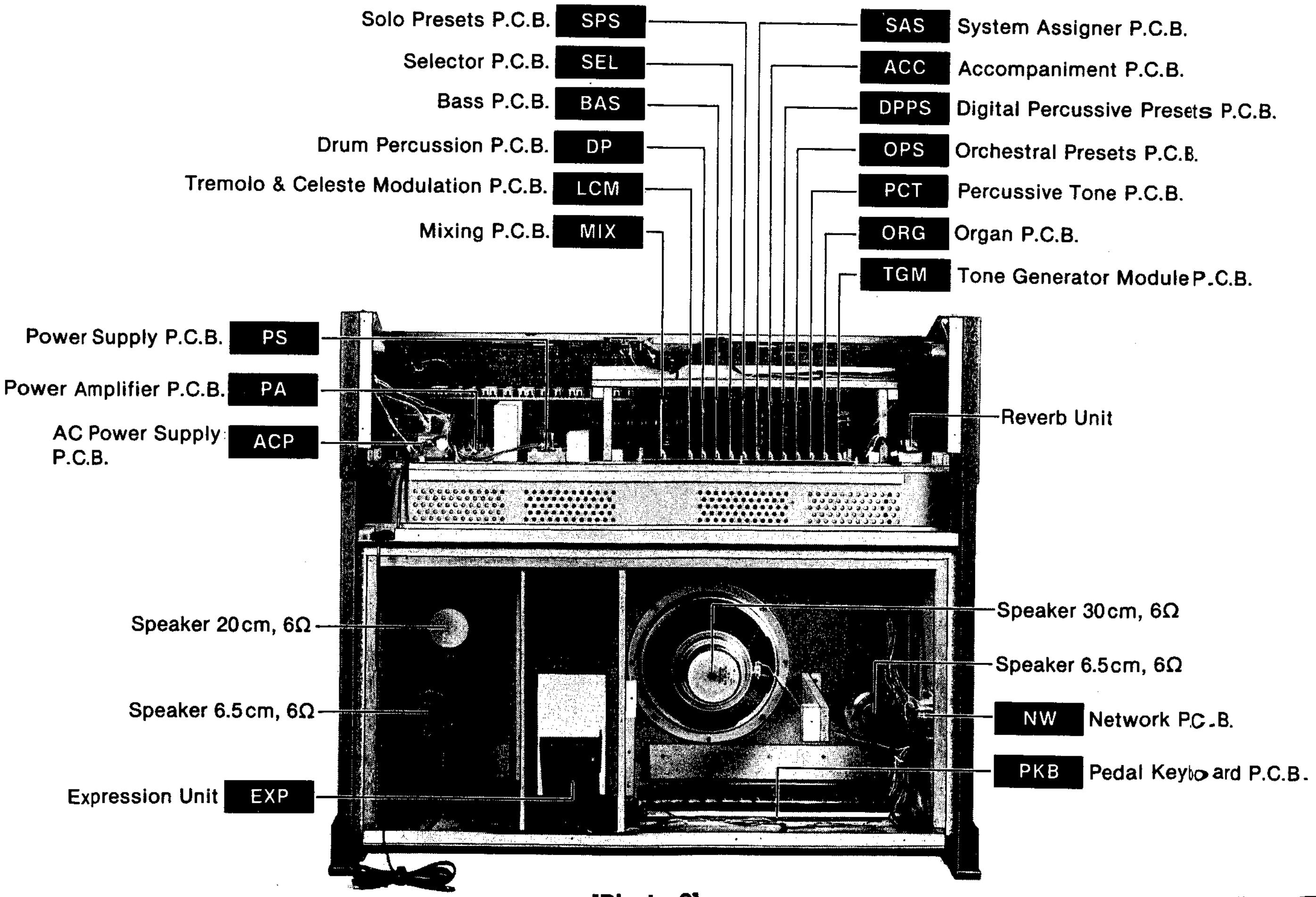
PRINTED CIRCUIT BOARDS LOCATION


MD Musical Display P.C.B.
Upper Control Panel Left P.C.B. CPL
CPR Upper Control Panel Right P.C.B.

[Photo-1]

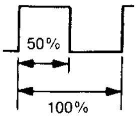
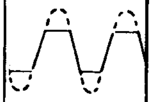

Lower Control Panel Left P.C.B. CPSL
CPSR Lower Control Panel Right P.C.B.
LKB Lower Manual Keyboard P.C.B.
Upper Manual Keyboard P.C.B. UKB
MPC Memory Pack Control P.C.B.
Power Transformer
Jack 2 P.C.B. JACK2
JACK1 Jack 1 P.C.B.

[Photo-2]

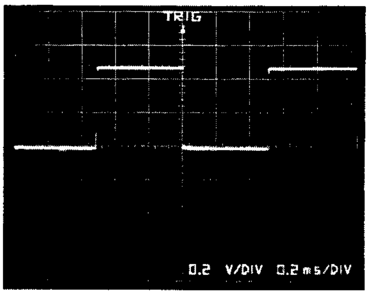

Solo Presets P.C.B. SPS
Selector P.C.B. SEL
Bass P.C.B. BAS
Drum Percussion P.C.B. DP
Tremolo & Celeste Modulation P.C.B. LCM
Mixing P.C.B. MIX
SAS System Assigner P.C.B.
ACC Accompaniment P.C.B.
DPPS Digital Percussive Presets P.C.B.
OPS Orchestral Presets P.C.B.
PCT Percussive Tone P.C.B.
ORG Organ P.C.B.
TGM Tone Generator Module P.C.B.
Power Supply P.C.B. PS
Power Amplifier P.C.B. PA
AC Power Supply P.C.B. ACP
Reverb Unit
Speaker 20cm, 6Ω
Speaker 6.5cm, 6Ω
Expression Unit EXP
Speaker 30cm, 6Ω
Speaker 6.5cm, 6Ω
NW Network P.C.B.
PKB Pedal Keyboard P.C.B.

[Photo-3]

MEASUREMENTS AND ADJUSTMENTS

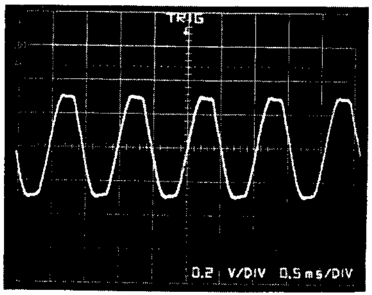
ADJUSTMENT	MEASURING CONDITIONS	EQUIPMENT	ADJUSTMENT CIRCUIT BOARD	ADJ. POINT	CONNECT METER TO	METER READING
Tuning (Tab)	tuning (free set).............off	Oscilloscope	SAS P.C.B.	VR1	check point ⑬	 50% 100%
	Connect the oscilloscope to check poiint ⑬ of system assigner P.C.B. and adjust VR1 so that the duty ratio of output waveform is 50%.					
Tuning (mono-tone)	tuning (free set).............off	Oscilloscope	SAS P.C.B.	VR2	check point ⑭	
	Connect the oscilloscope to check point ⑭ of system assigner P.C.B. and adjust VR2 so that the duty ratio of output waveform is 50%.					
Reverb depth	u. tab voices..................flute 4′, 8′, 16′ u. tab volume.................max main volume..................max reverb..............................max upper keyboard ....C5∼B5 celeste/tremolo ....off	Electric voltmeter	MIX P.C.B.	VR1	check point ⑯	200mVrms
	1. Connect the electric voltmeter to check point ⑯ of mixing P.C.B. 2. Adjust VR1 so that the output level of check point ⑯ is 200mVrms when the C5∼B5 keys (7 white keys) of upper keyboard are depressed.					
Output level	u. tab voices..................flute 4′, 8′, 16′ u. tab volume.................max main volume..................max expression pedal...........max upper keyboard ....C3, E3, G3 reverb volume................min celeste/tremolo ....off	Electric voltmeter	MIX P.C.B.	VR2	check point ③ of PA P.C.B.	4.0Vrms
	1. Connect the electric voltmeter to check point ③ of power amplifier P.C.B. 2. Adjust VR2 of mixing P.C.B. so that output level is 4.0Vrms when the C3, E3, G3 keys of upper keyboard are depressed.					
BBD bias	any position	Oscilloscope and Oscillator	LCM P.C.B.	VR1	Check point ㉘	
	1. Connect the oscilloscope to check point ㉘ of tremolo & celeste modulation P.C.B. 2. Input 1kHz sine wave to IC15-③ pin by oscillator through capacitor of less than 0.1μF. Then, adjust the output level of oscillator until the sinwave on the oscilloscope is clipped. 3. Adjust VR1 so that the output waveforms on the oscilloscope are evenly clipped at top and bottom.					

Tuning

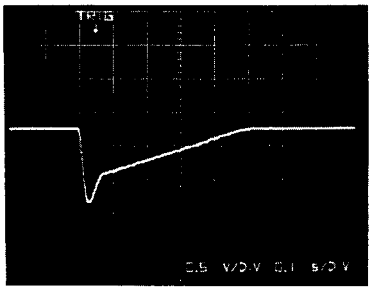
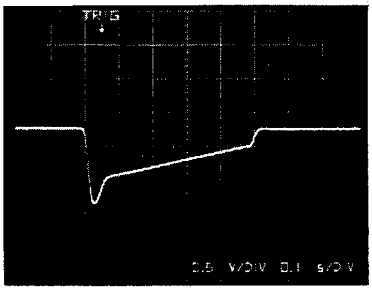
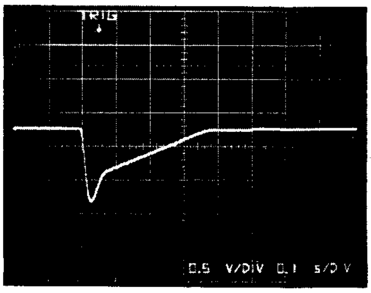
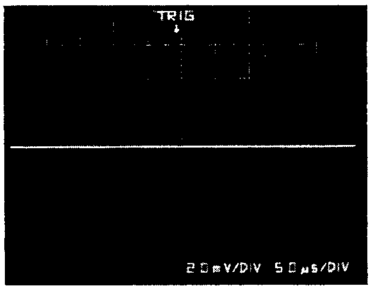
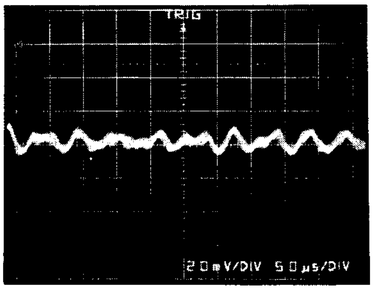


[Photo-4]

BBD bias adjustment



[Photo-5]

<table>
<tr><th>ADJUSTMENT</th><th>MEASURING CONDITIONS</th><th>EQUIPMENT</th><th>ADJUSTMENT CIRCUIT BOARD</th><th>ADJ. POINT</th><th>CONNECT METER TO</th><th>METER READING</th></tr>
<tr><td rowspan="3">Orchestral presets envelope</td><td>orchestral presets.........wah brass
upper keyboard ....C4</td><td>Oscilloscope</td><td>OPS P.C.B.</td><td>VR1</td><td>check point ⓲</td><td>Photo-6</td></tr>
<tr><td colspan="6">1. Connect the oscilloscope to check point ⓲ of orchestral presets P.C.B.
2. Adjust VR1 so that the envelope waveform of wah brass is as shown in photo-6 when C4 key of upper keyboard is turned ON.</td></tr>
<tr><td colspan="6">○: Good

[Photo-6]
×: Falt

[Photo-7]
×: Falt

[Photo-8]</td></tr>
<tr><td rowspan="2">Click level
(orchestral conductor)</td><td>main volume..................max.
expression pedal...........max.</td><td>—</td><td>SEL P.C.B.</td><td>VR1</td><td colspan="2">Adjust to the minimum click sound by hearing.</td></tr>
<tr><td colspan="6">Adjust VR1 of selector P.C.B. so that the click sound may be the minimum by hearing when the tab voices and percussive presets buttons of orchestral conductor are changed over. (Turn on the key to open the signal gate before this adjustment.)</td></tr>
<tr><td rowspan="3">Click level
(percussive presets)</td><td>any position (key...........OFF)</td><td>Oscilloscope</td><td>DPPS P.C.B.</td><td>VR1</td><td>check point ❻</td><td>Photo-9</td></tr>
<tr><td colspan="6">1. Connect the oscilloscope to check point ❻ of digital percussive presets P.C.B.
2. Adjust VR1 so that the noise waveforms on the oscilloscope are minimum level.</td></tr>
<tr><td colspan="6">○: Good

[Photo-9]
×: Falt

[Photo-10]</td></tr>
</table>

Remarks:

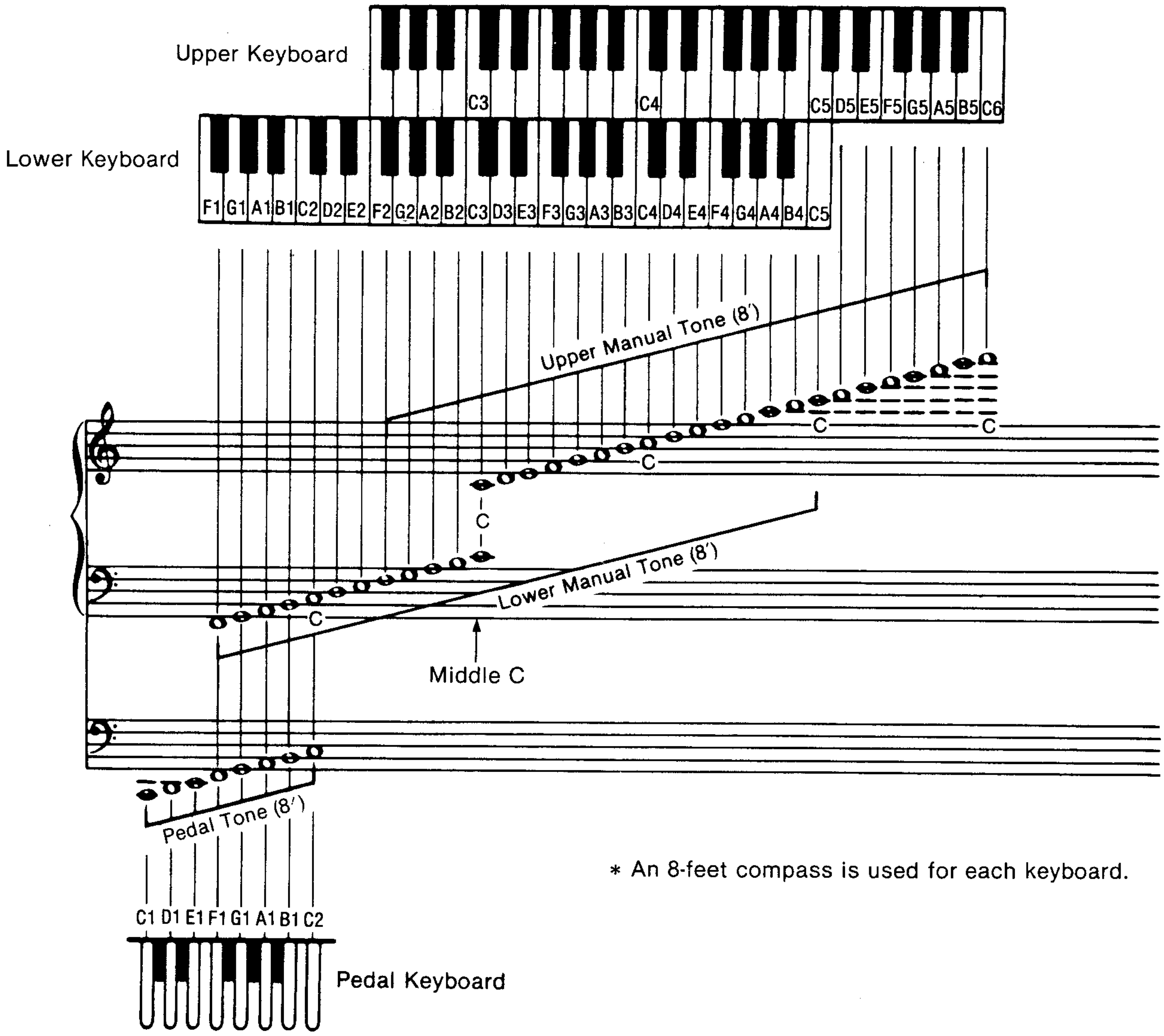
PRECAUTIONS BEFORE SERVICING

- **Important safety notice:**
  Components identified by ⚠ mark have special characteristics for safety.
  When replacing any of these components, use only manufacturer's specified parts.
- **Measuring of output waveforms**
  1. The waveform was measured by "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may somewhat change due to variation of timing of measure.
  2. The voltage shown in the photo is 1/10 of the actual value. However, the actual voltage is 10 times of as shown in this photo.
- Trouble often occur due to faulty operation of your electronic organ if you are not completely familiar with its mechanisms. Therefore, if your organ shows the following symptoms, please check the instrument before repair.

Phenomenon	Cause and remedy
The buttons, tablets, keyboards, etc. malfunction.	• Press the Fullband Setting Computer button first to turn it on and then depress the initial key on the lower keyboard. • If the buttons, tablets, keyboards, etc. do not return to normal, turn the power switch off once, then turn on again.
Voices of flute tablets do not sound.	The flute volume levels are adjustable for each individual tablet. If set to 0, however, the voice of the tablet will not sound. Adjust the flute tablets to the desired levels.
Different voices are heard in the lower and upper half keys on the upper keyboard.	The lower portion of the upper manual keyboard is used to sound the lower manual voices when the lower manual keyboard is required for programming functions.
A rhythm does not start or no rhythm sounds.	• No rhythm sounds if the drum percussion on button is turned off. • If the PCC button has no stored chords. No rhythm will start when turned on. Press the cancel button. • If the Composer button has no stored rhythm patterns, no rhythm will sound. Select other rhythm buttons.
Rhythm tempo control remains inoperative.	When the tempo set button is turned on: • The tempo control does not operate if the fine button is turned off. • If the fine button is turned on, fine adjustment possible in the tempo control. Press the tempo set buttons I and II simultaneously to turn them off. This allows the rhythm tempo to be adjusted with the tempo control.
The foot switch does not operate properly.	Any functional on and off operation other than the factory-presets is storable in the foot switch.
The tremolo speed is improper.	The fast multi-tremolo speed is preadjustable. Adjust to your favorite speed.
The contents of the Program Chord Computer, Fullband Setting Computer, etc. cannot be stored.	After pressing the record, depress the necessary buttons within 5 seconds. The record button turns off after a lapse of 5 seconds, making storage operation impossible. Press the record button again.
When storing the created tones and effects in the Voice Setting Computer, voices other than those desired are stored.	• To store your created tones and effects, press the 1 to 7 buttons of the Voice Setting Computer while the set button is held down. • To select your favorite voice from the 20 factory-preset voices, press the record button and depress one of the 1 to 7 buttons on the Voice Setting Computer within 5 seconds. Then press the key corresponding to the preferred voice of the keys 1 to 20 on the lower keyboard. Finally press the selected 1 to 7 button again.

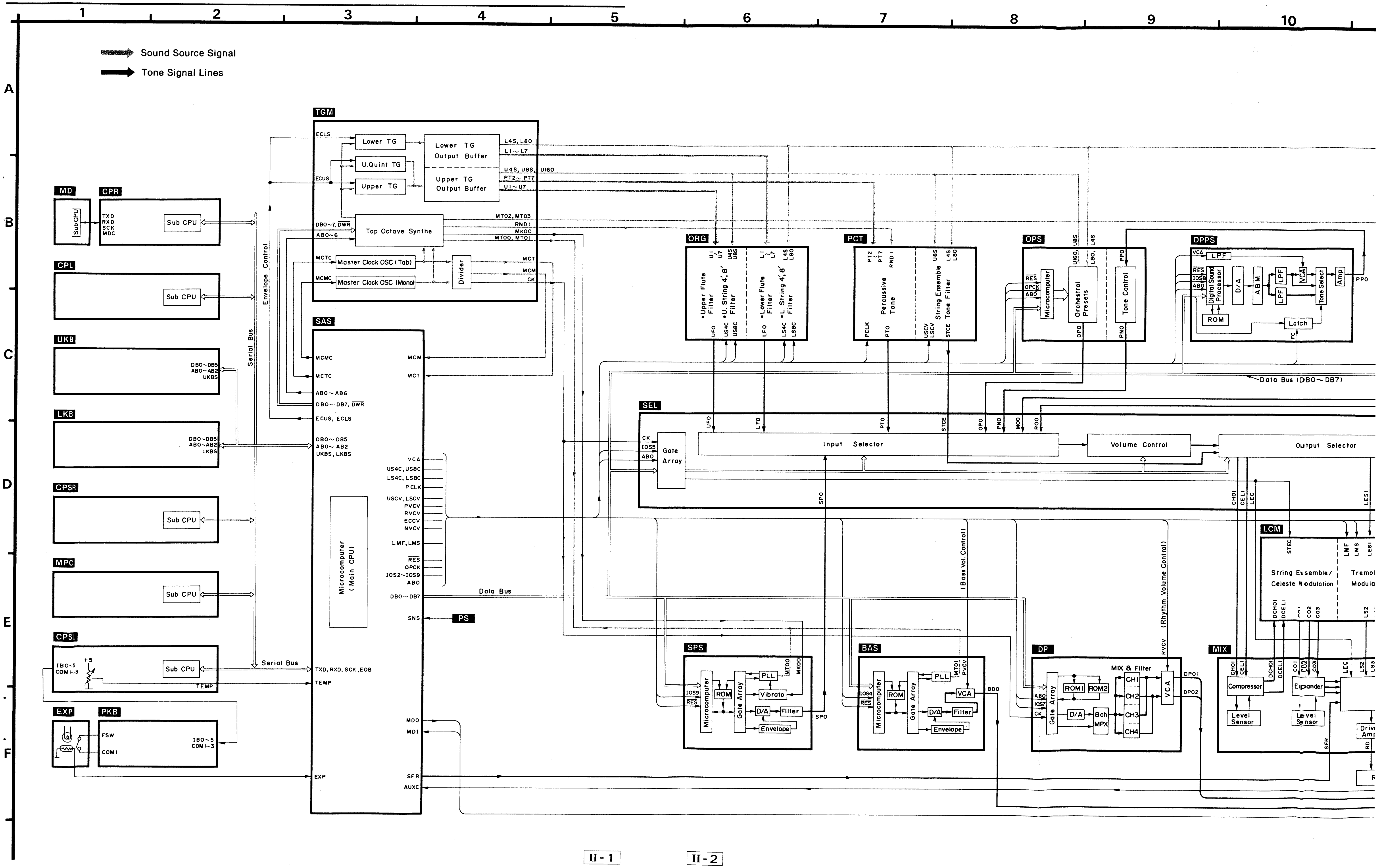
Phenomenon	Cause and remedy
Storage is not possible with the Program Chord Computer.	• Check that the PCC button is slowly flashing. Pressing the Fingered Mode button turns off the record button, making storage operation impossible. • Do not release the left hand (Chord designation) before pressing the measure keys (⊢⌒⊣, ⊢⌒⊣, and ⊢┼┼⊣).
When the rhythm stored in the Rhythm Composer is played, the Rhythmic Orchestra and automatic bass accompaniment do not sound.	• Store patterns in the rhythmic and melodic buttons of the Rhythmic Orchestra, just as you would with other rhythmic instrumental effects. • The bass of auto play chord sounds with a drum bass, which should be stored.
The stored registration cannot be used when performance is started with the Play Sequencer button turned on.	To use the stored registration, turn on the Fullband Setting Computer button and then press the 1 key on the lower keyboard.
The stored introduction is not reproduced during automatic performance.	• Set the beginning of a song, such as an introduction before turning on the record button. • To add an introduction after the record button and Play Sequencer button flash, set it after turning on the Fullband Setting Computer button. Then turn off the Fullband Setting Computer button.
No storage is possible even when the record button and Play Sequencer button are slowly flashing.	• No storage is possible when the Fullband Setting Computer button is turned on. Turn it off before playing. • If any Play Sequencer button is lit, press the start/stop button for automatic performance of the stored part. Another part can then be stored.
The quick rhythm tempo is delayed when the Play Sequencer is used.	This occurs when too many tones are played at one time. Slow down the tempo (to about ♩ = 250) or reduce the number of tones played at a time.
Different tones and effects are stored in the Fullband Setting Computer (FSC).	If the Voice Setting Computer (VSC) function is selected, the stored contents in this button are stored into the FSC. When the tones and effects selected by the VSC are changed, store them in the VSC again before storage in the FSC.
The cabinet and slide cover become heated to some degree.	The Technics organ has a built-in power source that heats the cabinet and slide cover to some degree. This is not an indication of trouble.
Nine or more keys of upper or lower keyboard are simultaneously depressed, only 8 keys make sound.	It is designed so that upper and lower keyboards can make sound only up to 8 keys when harmonic coupler is not provided. • Priority is given to 8 keys of higher-pitched sound.
Upper or lower keyboard makes sound only to 4 tones.	With harmonic coupler provided, each keyboard can simultaneously sound only up to 4 tones. • Priority is given to 4 keys of higher-pitched sound.
To octave sounds of flute 2′, $1^1/_3$′, 1′ are repeated.	The top octave C key of flute 2′, F∼C keys (8 keys) in the top octave part of flute $1^1/_3$′, and top octave keys (C∼C) of flute 1′ are designed to be repeated.

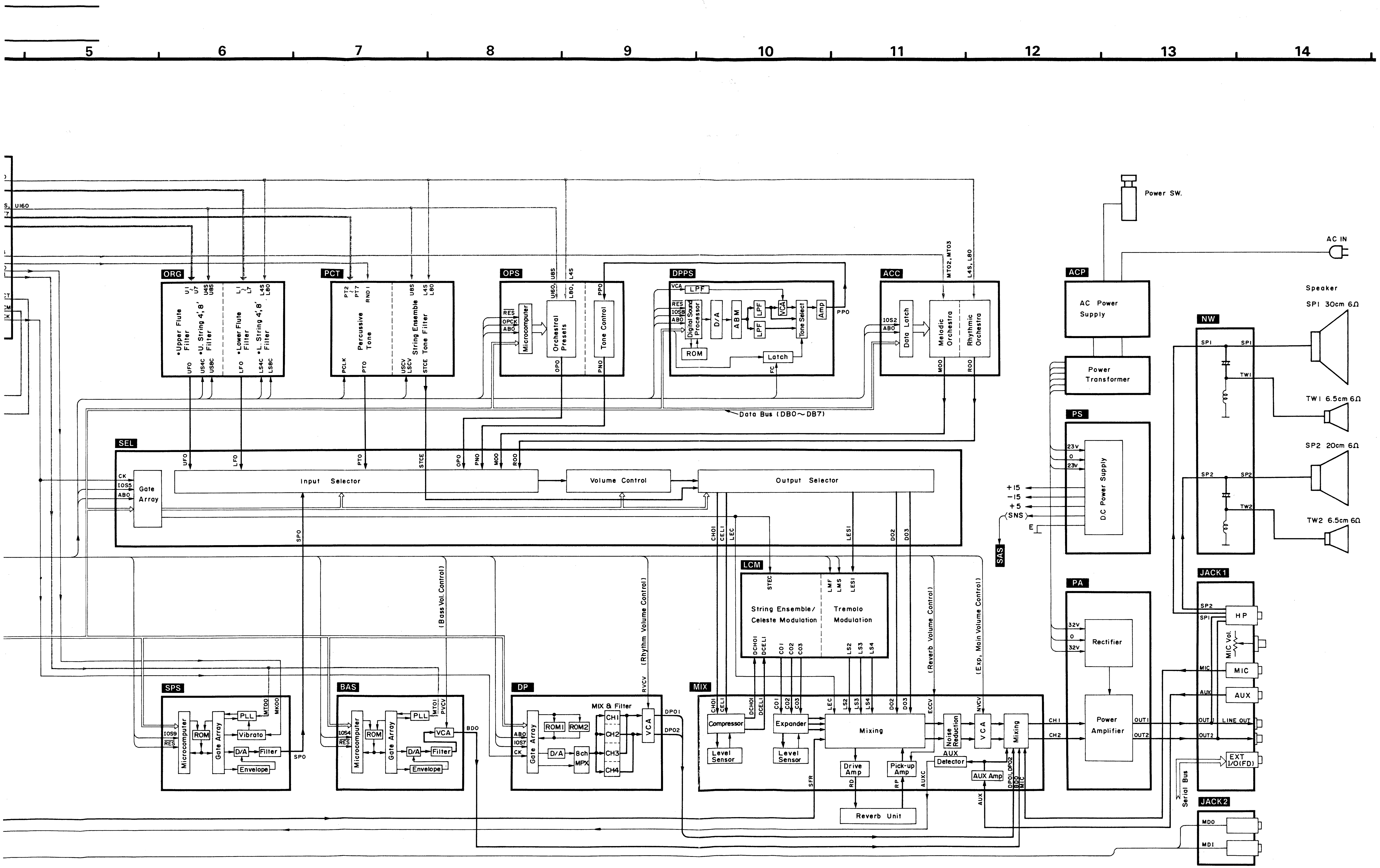
KEYBOARD RANGES


Upper Keyboard
C3
C4
C5 D5 E5 F5 G5 A5 B5 C6
Lower Keyboard
F1 G1 A1 B1 C2 D2 E2 F2 G2 A2 B2 C3 D3 E3 F3 G3 A3 B3 C4 D4 E4 F4 G4 A4 B4 C5
Upper Manual Tone (8′)
C
C
C
C
Lower Manual Tone (8′)
C
Middle C
Pedal Tone (8′)
C1 D1 E1 F1 G1 A1 B1 C2
Pedal Keyboard

* An 8-feet compass is used for each keyboard.

TOTAL BLOCK DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
Sound Source Signal
Tone Signal Lines
MD
Sub CPU
CPR
TXD
RXD
SCK
MDC
Sub CPU
CPL
Sub CPU
UKB
DB0~DB5
AB0~AB2
UKBS
LKB
DB0~DB5
AB0~AB2
LKBS
CPSR
Sub CPU
MPC
Sub CPU
CPSL
IB0~5
COM1~3
+5
Sub CPU
TEMP
EXP
PKB
FSW
COM1
IB0~5
COM1~3
Serial Bus
Envelope Control
Serial Bus
TGM
ECLS
ECUS
Lower TG
U.Quint TG
Upper TG
Lower TG Output Buffer
Upper TG Output Buffer
L4S, L80
L1~L7
U4S, U8S, U160
PT2~PT7
U1~U7
DB0~7, DWR
AB0~6
Top Octave Synthe
MT02, MT03
RND1
MK00
MT00, MT01
MCTC
MCMC
Master Clock OSC (Tab)
Master Clock OSC (Mono)
Divider
MCT
MCM
CK
SAS
MCMC
MCTC
AB0~AB6
DB0~DB7, DWR
ECUS, ECLS
DB0~DB5
AB0~AB2
UKBS, LKBS
Microcomputer (Main CPU)
TXD, RXD, SCK, EOB
TEMP
EXP
MCM
MCT
VCA
US4C, US8C
LS4C, LS8C
PCLK
USCV, LSCV
PVCV
RVCV
ECCV
NVCV
LMF, LMS
RES
OPCK
IOS2~IOS9
AB0
DB0~DB7
Data Bus
SNS
PS
MDO
MDI
SFR
AUXC
ORG
U1~U7
U4S
U8S
•Upper Flute Filter
•U. String 4', 8' Filter
UFO
US4C
US8C
L1~L7
L4S
L80
•Lower Flute Filter
•L. String 4', 8' Filter
LFO
LS4C
LS8C
PCT
PT2~PT7
RND1
Percussive Tone
PCLK
PTO
U8S
L4S
L80
String Ensemble Tone Filter
USCV
LSCV
STCE
OPS
U8S
L4S
RES
OPCK
AB0
Microcomputer
U160, L80, L4S
Orchestral Presets
OPO
PPO
Tone Control
PNO
DPPS
VCA
LPF
RES
IOS8
AB0
Digital Sound Processor
D/A
ABM
LPF
LPF
LPF
VCA
Tone Select
Amp
PPO
ROM
Latch
FC
Data Bus (DB0~DB7)
SEL
CK
IOS5
AB0
Gate Array
UFO
LFO
PTO
STCE
OPO
PNO
MOO
ROO
Input Selector
Volume Control
Output Selector
SPO
CHO1
CELI
LEC
LES1
(Bass Vol. Control)
(Rhythm Volume Control)
LCM
STEC
LMF
LMS
LES1
String Ensemble/ Celeste Modulation
Tremol Modula
DCHO1
DCELI
CO1
CO2
CO3
LS2
SPS
IOS9
RES
Microcomputer
ROM
Gate Array
PLL
Vibrato
D/A
Filter
Envelope
MT00
MK00
SPO
BAS
IOS4
RES
Microcomputer
ROM
Gate Array
PLL
VCA
D/A
Filter
Envelope
MT01
PVCV
BDO
DP
AB0
IOS7
CK
Gate Array
ROM1
ROM2
D/A
8ch MPX
MIX & Filter
CH1
CH2
CH3
CH4
VCA
RVCV
DPO1
DPO2
MIX
CHO1
CELI
Compressor
Level Sensor
DCHO1
DCELI
CO1
CO2
CO3
Expander
Level Sensor
LEC
LS2
LS3
Drive Amp
SFR
RD

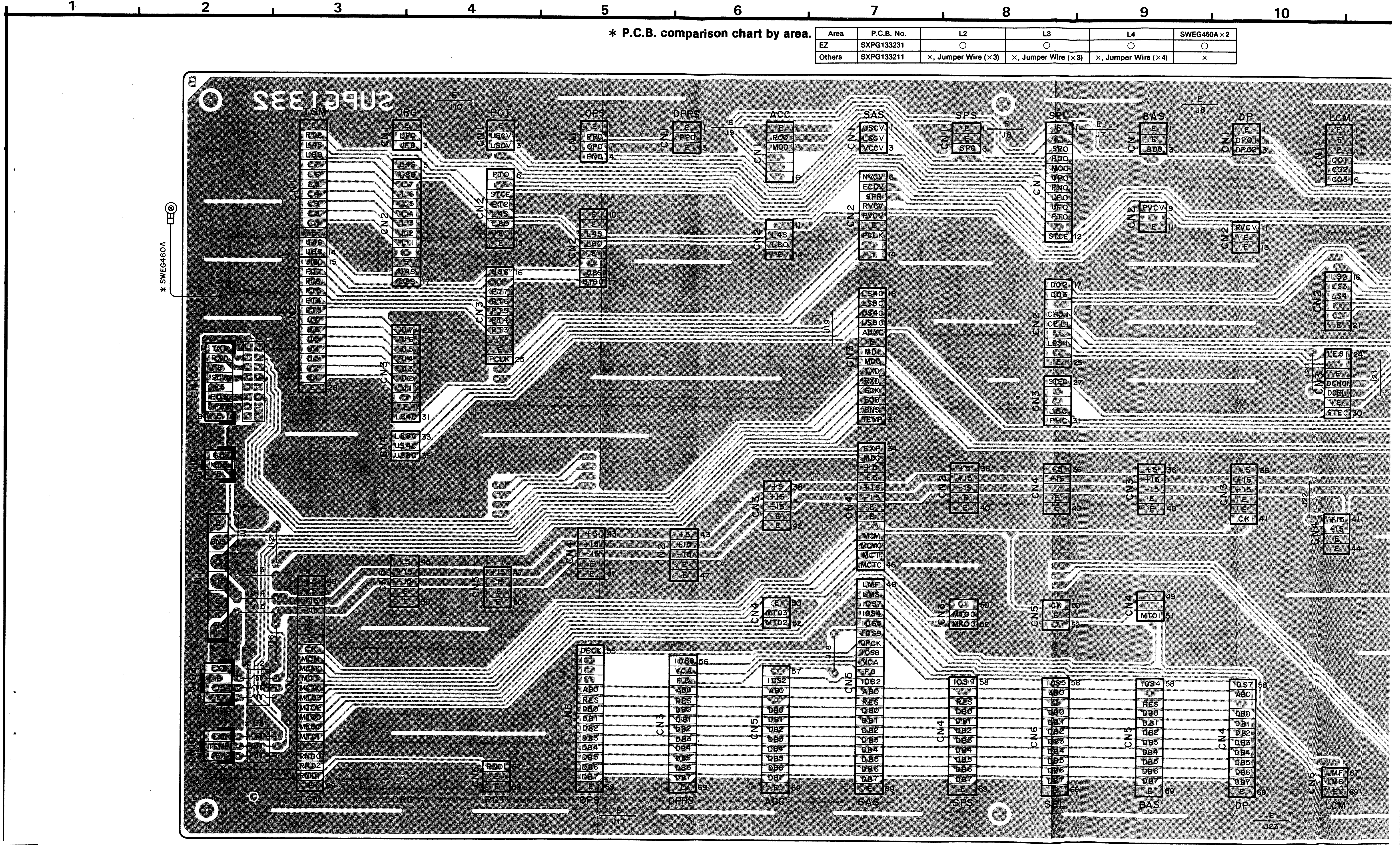

5
6
7
8
9
10
11
12
13
14
ORG
Upper Flute Filter
U. String 4, 8' Filter
Lower Flute Filter
L. String 4, 8' Filter
UFO
US4C
US8C
LFO
LS4C
LS8C
PCT
Percussive Tone
String Ensemble Tone Filter
PT2 ~ PT7
RND1
PCLK
PTO
USCV
LSCV
STCE
OPS
Microcomputer
Orchestral Presets
Tone Control
RES
OPCK
ABO
U160, U8S
L80, L4S
PPO
OPO
PNO
DPPS
VCA
LPF
IOS8
Digital Sound Processor
D/A
ABM
Tone Select
Amp
ROM
Latch
FC
ACC
Data Latch
Melodic Orchestra
Rhythmic Orchestra
IOS2
MT02, MT03
L4S, L80
MOO
ROO
Data Bus (DB0～DB7)
SEL
Gate Array
CK
IOS5
Input Selector
Volume Control
Output Selector
UFO
LFO
PTO
STCE
OPO
PNO
MOO
ROO
SPO
CHO1
CELI
LEC
LESI
DO2
DO3
LCM
String Ensemble/ Celeste Modulation
Tremolo Modulation
STEC
LMF
LMS
LESI
DCHO1
DCELI
CO1
CO2
CO3
LS2
LS3
LS4
(Bass Vol. Control)
(Rhythm Volume Control)
(Reverb Volume Control)
(Exp, Main Volume Control)
SPS
Microcomputer
ROM
Gate Array
PLL
Vibrato
D/A
Filter
Envelope
IOS9
RES
MTOO
MKOO
SPO
BAS
IOS4
MTO1
PVCV
VCA
BDO
DP
MIX & Filter
ROM1
ROM2
8ch MPX
CH1
CH2
CH3
CH4
IOS7
RVCV
DPO1
DPO2
MIX
Compressor
Level Sensor
Expander
Mixing
Noise Reduction
Drive Amp
Pick-up Amp
AUX Detector
AUX Amp
ECCV
NVCV
SFR
RD
RP
AUXC
AUX
MIC
Reverb Unit
CH1
CH2
Power SW.
AC IN
ACP
AC Power Supply
Power Transformer
PS
DC Power Supply
23V
0
+15
−15
+5
(SNS)
E
SAS
PA
Rectifier
Power Amplifier
32V
OUT1
OUT2
NW
SP1
TW1
SP2
TW2
Speaker
SP1 30cm 6Ω
TW1 6.5cm 6Ω
SP2 20cm 6Ω
TW2 6.5cm 6Ω
JACK1
HP
MIC Vol.
MIC
AUX
LINE OUT
EXT I/O(FD)
Serial Bus
JACK2
MDO
MDI

II-1 II-2 II-3

MB MOTHER CIRCUIT BOARD

∗ P.C.B. comparison chart by area.

Area	P.C.B. No.	L2	L3	L4	SWEG460A×2
EZ	SXPG133231	○	○	○	○
Others	SXPG133211	×, Jumper Wire (×3)	×, Jumper Wire (×3)	×, Jumper Wire (×4)	×


1
2
3
4
5
6
7
8
9
10
SUPG1332
∗ SWEG460A
TGM
ORG
PCT
OPS
DPPS
ACC
SAS
SPS
SEL
BAS
DP
LCM
CN100
CN101
CN102
CN103
CN104
J6
J7
J8
J9
J10
J17
J18
J19
J20
J21
J22
J23
L2
L3

∗ P.C.B. comparison chart by area.

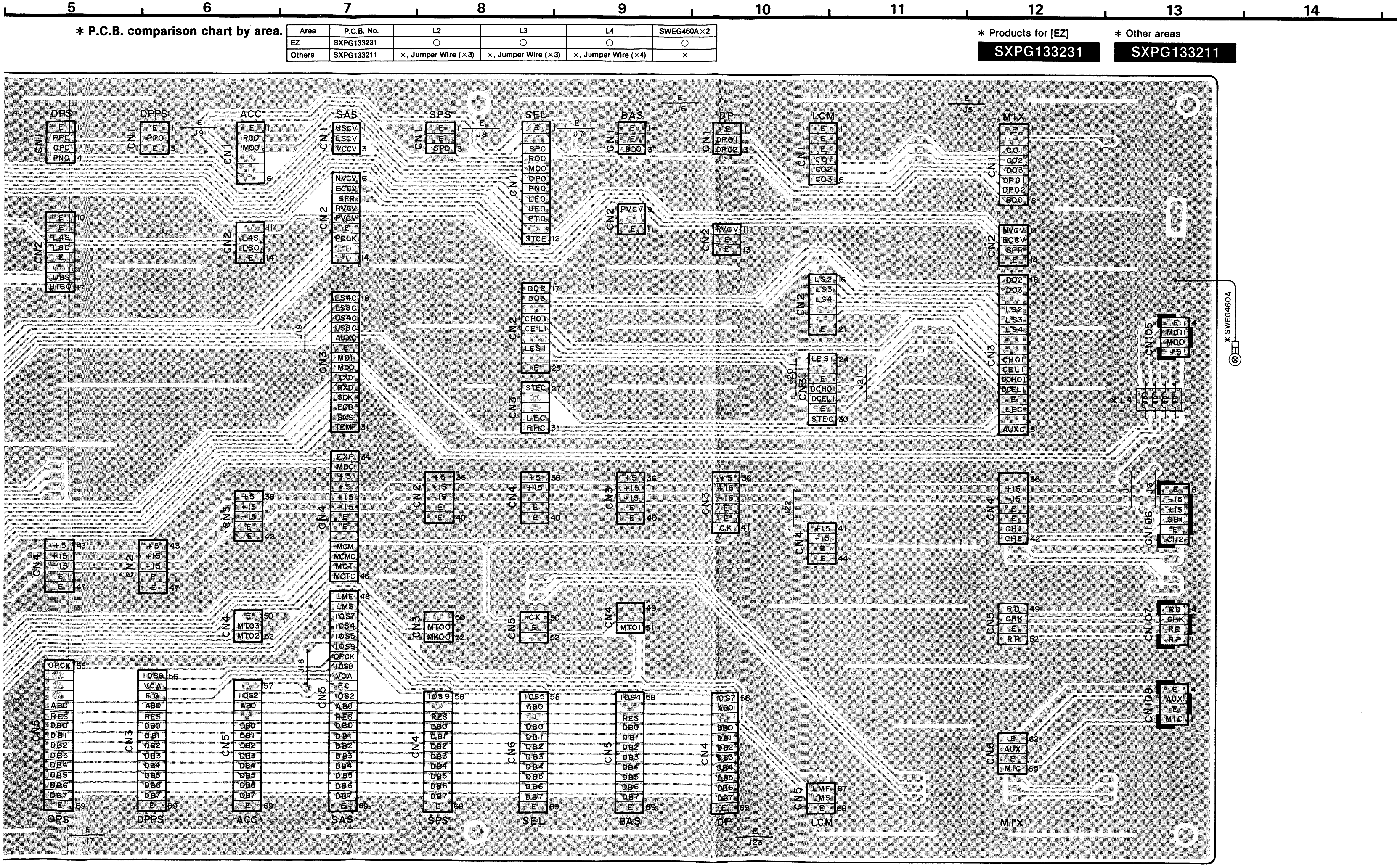
Area	P.C.B. No.	L2	L3	L4	SWEG460A×2
EZ	SXPG133231	○	○	○	○
Others	SXPG133211	×, Jumper Wire (×3)	×, Jumper Wire (×3)	×, Jumper Wire (×4)	×

∗ Products for [EZ]

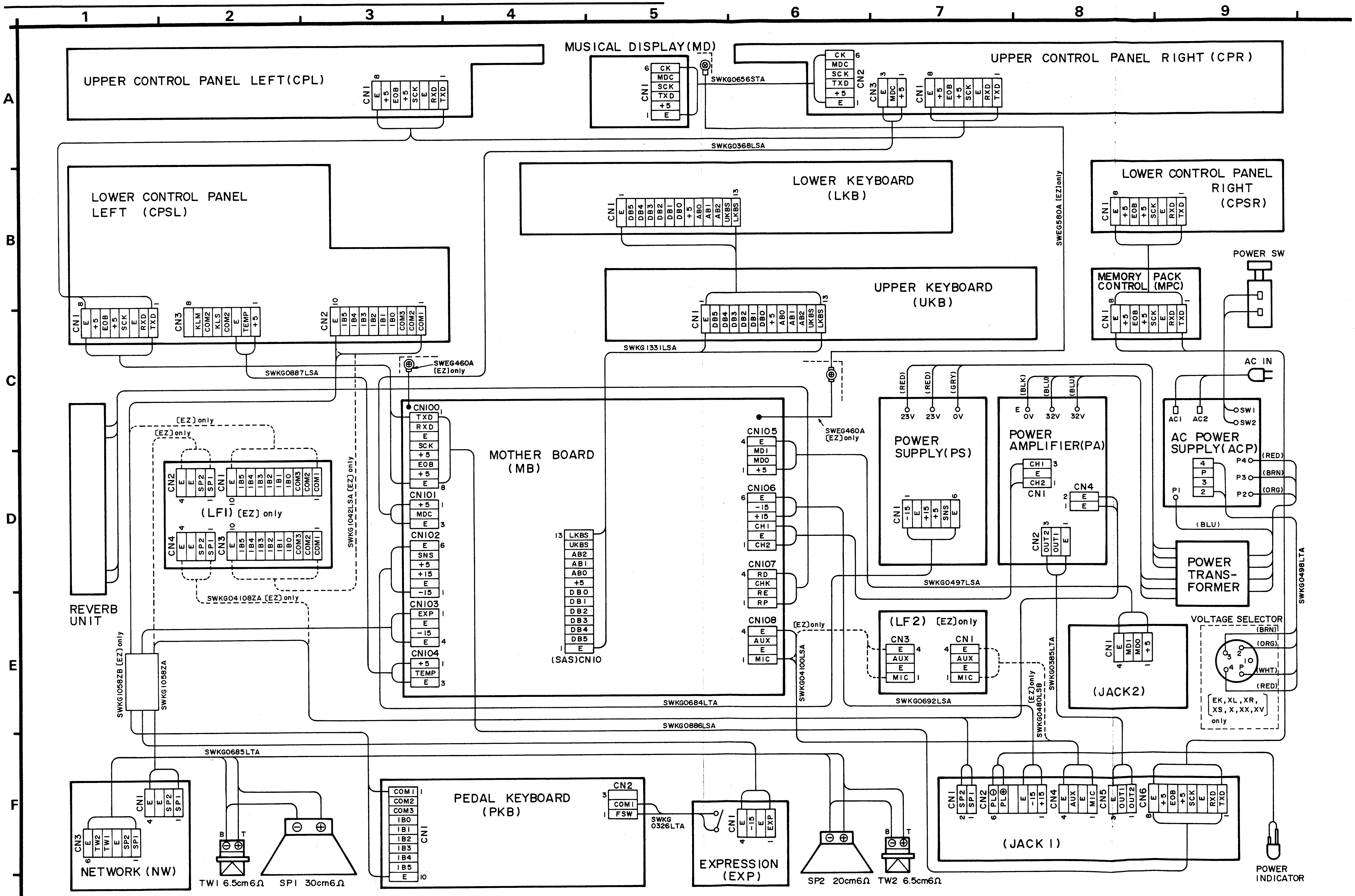
SXPG133231

∗ Other areas

SXPG133211

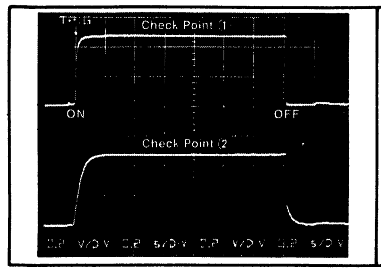

5
6
7
8
9
10
11
12
13
14
OPS
DPPS
ACC
SAS
SPS
SEL
BAS
DP
LCM
MIX
CN1
CN2
CN3
CN4
CN5
CN6
CN105
CN106
CN107
CN108
E PPO OPO PNO
USCV LSCV VCCV
E ROO MOO
E E SPO
E SPO ROO MOO OPO PNO LFO UFO PTO STCE
E E BDO
E DPO1 DPO2
E E E CO1 CO2 CO3
E CO1 CO2 CO3 DPO1 DPO2 BDO
E E L4S L8O E UBS UI6O
L4S L8O E
NVCV ECCV SFR RVCV PVCV E PCLK
PVCV E
RVCV E E
NVCV ECCV SFR E
LS4C LS8C US4C US8C AUXC E MDI MDO TXD RXD SCK EOB SNS TEMP
DO2 DO3 CHO1 CELI LES1 E
STEC LEC PHC
LS2 LS3 LS4 E
LES1 E DCHO1 DCEL1 E STEC
DO2 DO3 LS2 LS3 LS4 CHO1 CEL1 DCHO1 DCEL1 E LEC AUXC
E MDI MDO +5
∗ SWEG460A
∗ L4
EXP MDC +5 +5 +15 −15 E E MCM MCMC MCT MCTC
+5 +15 −15 E E
+5 +15 E E
+15 −15 E CK
+15 −15 E E
+15 −15 E E CHI CH2
E −15 +15 CHI E CH2
E MTO3 MTO2
MTOO MKOO
CK E
MTO1
RD CHK E RP
RD CHK RE RP
E AUX E MIC
LMF LMS IOS7 IOS4 IOS5 IOS9 OPCK IOS8 VCA FC IOS2 ABO RES DBO DB1 DB2 DB3 DB4 DB5 DB6 DB7 E
OPCK ABO RES DBO DB1 DB2 DB3 DB4 DB5 DB6 DB7 E
IOS8 VCA FC ABO RES DBO DB1 DB2 DB3 DB4 DB5 DB6 DB7 E
IOS9 IOS5 IOS4 IOS7
LMF LMS E
J3 J4 J5 J6 J7 J8 J9 J17 J18 J19 J20 J21 J22 J23
E

WIRING CONNECTION DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
UPPER CONTROL PANEL LEFT(CPL)
CN1 E +5 EOB +5 SCK E RXD TXD
MUSICAL DISPLAY(MD)
CN1 CK MDC SCK TXD +5 E
SWKG0656STA
UPPER CONTROL PANEL RIGHT(CPR)
CN2 CK MDC SCK TXD +5 E
CN3 E MDC +5
CN1 E +5 EOB +5 SCK E RXD TXD
SWKG0368LSA
LOWER CONTROL PANEL LEFT (CPSL)
CN1 E +5 EOB +5 SCK E RXD TXD
CN3 KLM COM2 KLS COM2 E TEMP +5
CN2 E IB5 IB4 IB3 IB2 IB1 IB0 COM3 COM2 COM1
LOWER KEYBOARD (LKB)
CN1 E DB5 DB4 DB3 DB2 DB1 DB0 +5 AB0 AB1 AB2 UKBS LKBS
UPPER KEYBOARD (UKB)
CN1 E DB5 DB4 DB3 DB2 DB1 DB0 +5 AB0 AB1 AB2 UKBS LKBS
SWKG1331LSA
SWEG580A [EZ]only
LOWER CONTROL PANEL RIGHT (CPSR)
CN1 E +5 EOB +5 SCK E RXD TXD
MEMORY PACK CONTROL (MPC)
CN1 E +5 EOB +5 SCK E RXD TXD
POWER SW
AC IN
SWKG0887LSA
SWEG460A [EZ]only
[EZ]only
[EZ]only
CN2 E E SP2 SP1
CN1 IB5 IB4 IB3 IB2 IB1 IB0 COM3 COM2 COM1
(LF1) [EZ] only
CN4 E E SP2 SP1
CN3 IB5 IB4 IB3 IB2 IB1 IB0 COM3 COM2 COM1
SWKG1042LSA [EZ] only
SWKG04108ZA [EZ] only
REVERB UNIT
MOTHER BOARD (MB)
CN100 TXD RXD E SCK +5 EOB +5 E
CN101 +5 MDC E
CN102 E SNS +5 +15 E -15
CN103 EXP E -15 E
CN104 +5 TEMP E
(SAS)CN10 LKBS UKBS AB2 AB1 AB0 +5 DB0 DB1 DB2 DB3 DB4 DB5 E
CN105 E MD1 MD0 +5
CN106 E -15 +15 CH1 E CH2
CN107 RD CHK RE RP
CN108 E AUX E MIC
SWEG460A [EZ]only
[EZ]only
SWKG0410OLSA
(RED) (RED) (GRY)
23V 23V 0V
POWER SUPPLY(PS)
CN1 -15 E +15 +5 SNS E
(BLK) (BLU) (BLU)
E 0V 32V 32V
POWER AMPLIFIER(PA)
CH1 E CH2 CN1
CN4 E E
CN2 OUT2 OUT1 E
AC1 AC2 SW1 SW2
AC POWER SUPPLY(ACP)
4 P 3 2
P4 P3 P2 P1
(RED) (BRN) (ORG)
(BLU)
POWER TRANS-FORMER
SWKG0497LSA
SWKG0498LTA
(LF2) [EZ]only
CN3 E AUX E MIC
CN1 E AUX E MIC
SWKG0692LSA
CN1 E MDI MDO +5
(JACK2)
VOLTAGE SELECTOR
(BRN) (ORG) (WHT) (RED)
EK, XL, XR, XS, X, XX, XV only
SWKG1058ZB [EZ]only
SWKG1058ZA
SWKG0684LTA
SWKG0886LSA
SWKG0685LTA
[EZ]only SWKG0480LSB
SWKG0385LTA
CN1 E E SP2 SP1
CN3 E TW2 TW1 E SP2 SP1
NETWORK (NW)
TW1 6.5cm6Ω
SP1 30cm6Ω
PEDAL KEYBOARD (PKB)
CN1 COM1 COM2 COM3 IB0 IB1 IB2 IB3 IB4 IB5 E
CN2 COM1 FSW
SWKG 0326LTA
CN1 E -15 E EXP
EXPRESSION (EXP)
SP2 20cm6Ω
TW2 6.5cm6Ω
CN1 SP2 SP1
CN2 PL⊖ PL⊕ E -15 +15
CN4 E AUX E MIC
CN5 E OUT1 OUT2
CN6 +5 EOB +5 SCK E RXD TXD
(JACK 1)
POWER INDICATOR

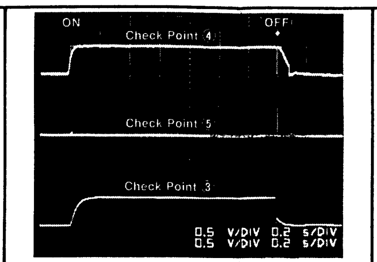
SAS SYSTEM ASSIGNER CIRCUIT BOARD

❶, ❷



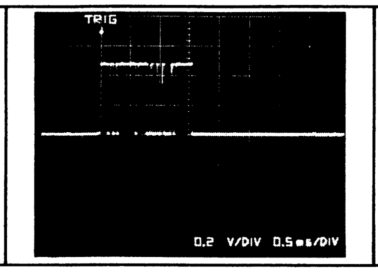
- Power SW............................ON-OFF

❸, ❹, ❺



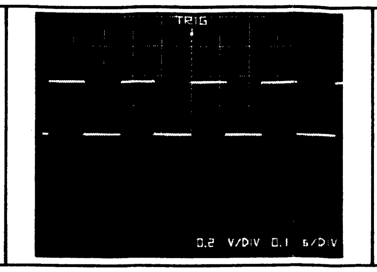
- Power SW............................ON-OFF

❻

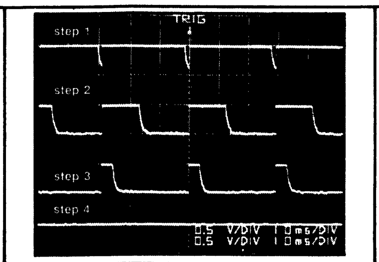


- Upper Tab Voices...............Flute 8'
- Upper Key............................ON

❼

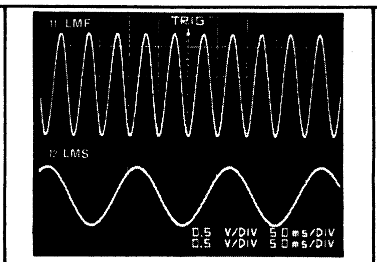


❾ ECLS, ❿ ECUS



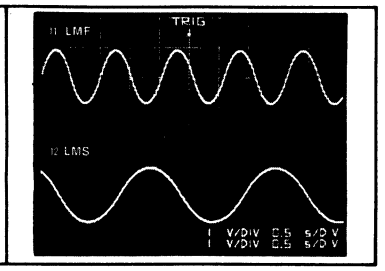
- Upper & Lower Sustain Control
- Step 1 (short)~Step 4 (long)

⓫ LMF, ⓬ LMS



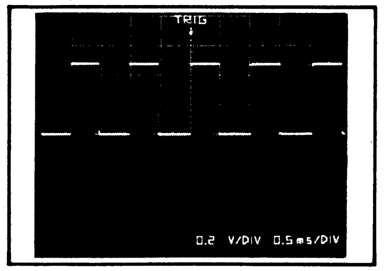
- Multi-tremolo.......................ON
- Slow/Fast.............................Fast

⓫ LMF, ⓬ LMS

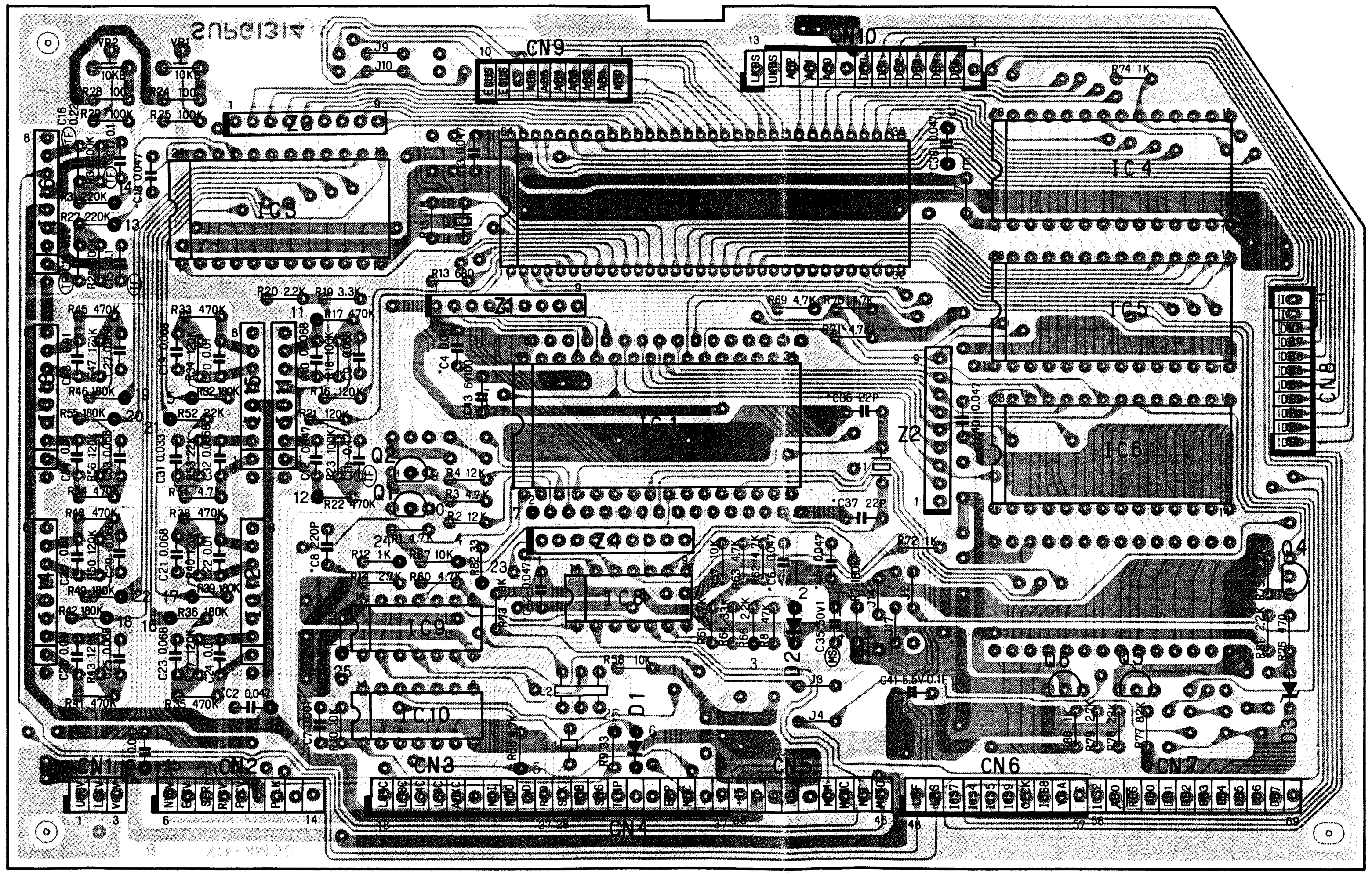


- Multi-tremolo.......................ON
- Slow/Fast.............................Slow

⓭, ⓮ Master Clock Control

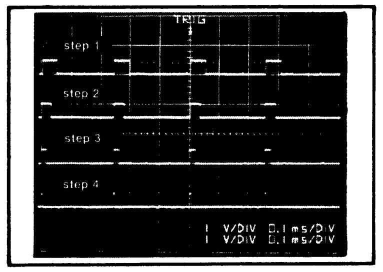


Circuit view on top of P.C.B



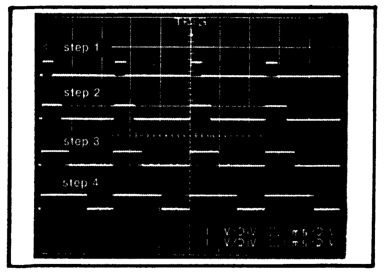
SXPG131441

⓯ Main Vol., EXP Control



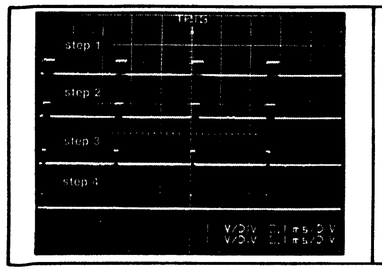
- EXP Pedal.............................Max.
- Main Vol..............................step 1 (min)~
  step 4 (max)
- Upper Key............................ON

⓰ Bass Volume Control



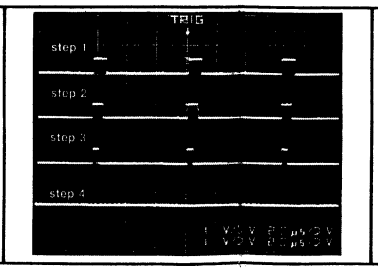
- Main Vol., EXP....................Max.
- Bass...8' • Bass Key...ON
- Bass Vol..............................step 1~4

⓱ Rhythm Volume Control



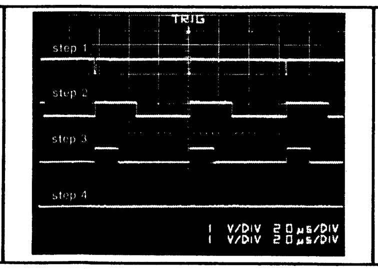
- Main Vol., EXP....................Max.
- Rhythm.................................start
- Rhythm Vol..........................step 1~4

⓲, ㉒ U & L String Ensemble Volume Control



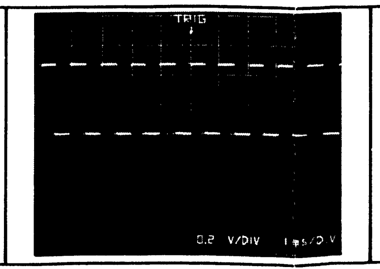
- U/L String Ensemble..........ON
- Upper/Lower Key...............ON
- Volume.................................step 1~4

⓳ Reverb Volume Control



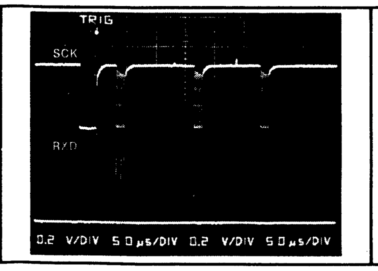
- Reverb Volume...................step 1~4

㉑ Record Signal

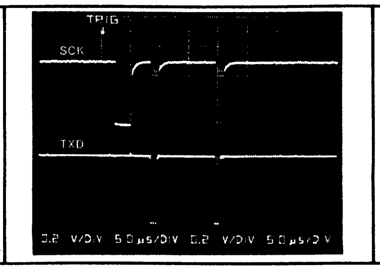


- Record SW..........................ON
- Rhythm Sequencer.............ON
- LKB.......................................C3

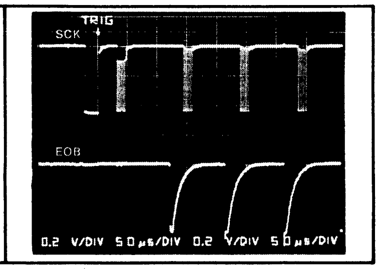
㉕ SCK, ㉓ RXD



㉕ SCK, ㉔ TXD



㉕ SCK, ㉖ EOB



NOTES:

- IC'S

IC1:	SVIG7810H
IC2:	SVIGM6050211
IC3:	SVIG65002017
IC4:	SVIG02EX60-A
IC5:	SVIG02EX60B
IC6:	SVIGD446415L
IC8:	SVIGM74LS03
IC9:	SVIGM53216
IC10:	SVIGTC74HC04
IC11~16:	SVIGM5218L

- TRANSISTORS

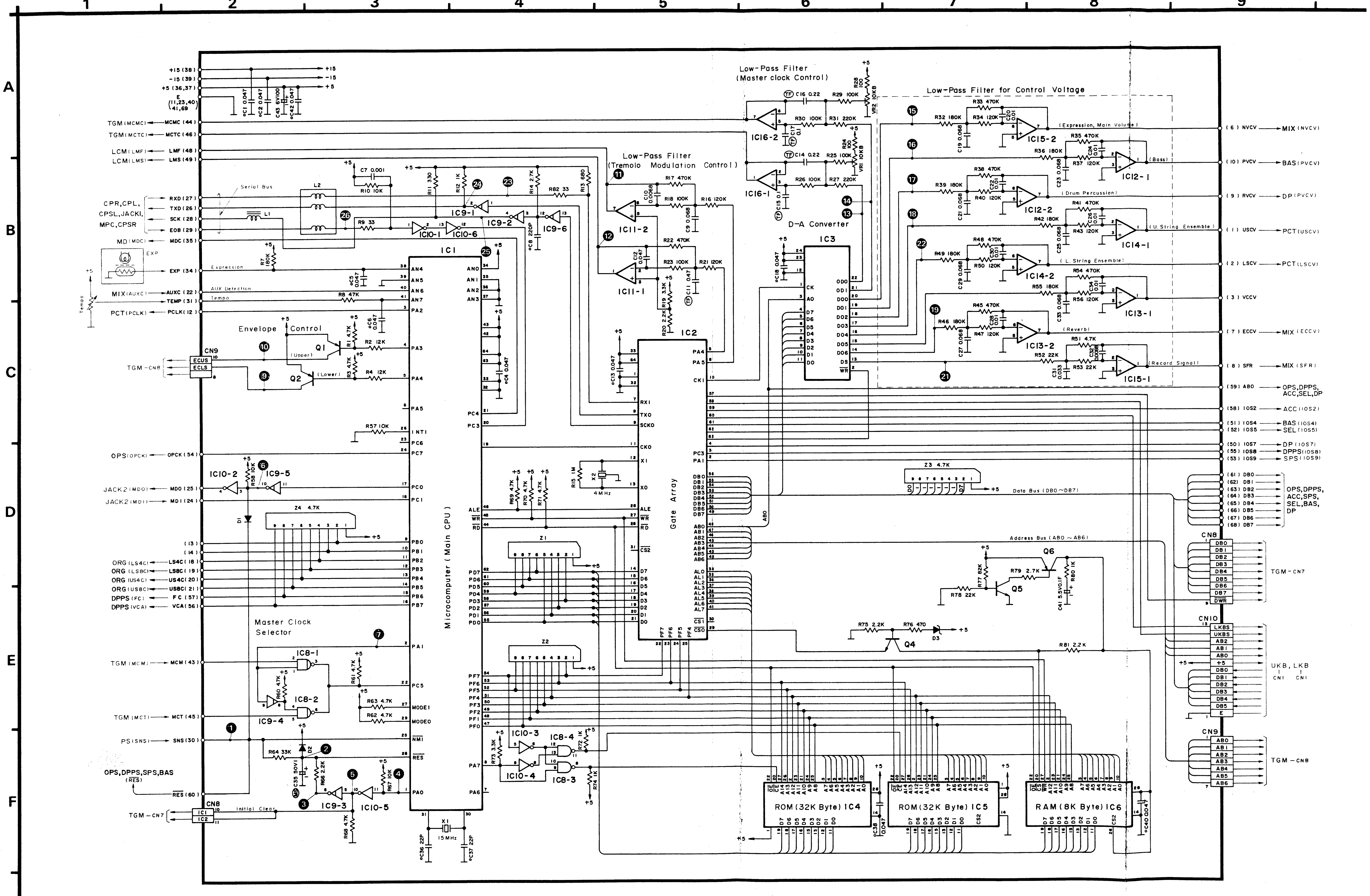
Q1, 2, 6:	2SA933STRS
Q4:	2SC1047C
Q5:	2SC2320LFG

- DIODES

D1, 2:	MA165TA5
D3:	MA4036H

SAS

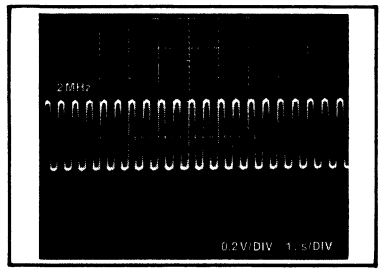
SYSTEM ASSIGNER CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
+15 (38)
-15 (39)
+5 (36,37)
E (11,23,40, 41,69)
TGM (MCMC) — MCMC (44)
TGM (MCTC) — MCTC (46)
LCM (LMF) — LMF (48)
LCM (LMS) — LMS (49)
CPR,CPL, CPSL,JACKI, MPC,CPSR
RXD (27)
TXD (26)
SCK (28)
EOB (29)
MD (MDC) — MDC (35)
EXP
EXP (34)
MIX (AUXC) — AUXC (22)
TEMP (31)
Tempo
PCT (PCLK) — PCLK (12)
Serial Bus
L1
L2
Expression
AUX Detection
Envelope Control
(Upper)
(Lower)
Q1
Q2
CN9
ECUS
ECLS
TGM-CN8
OPS (OPCK) — OPCK (54)
IC10-2
IC9-5
JACK2 (MDO) — MDO (25)
JACK2 (MDI) — MDI (24)
Z4 4.7K
ORG (LS4C) — LS4C (18)
ORG (LS8C) — LS8C (19)
ORG (US4C) — US4C (20)
ORG (US8C) — US8C (21)
DPPS (FC) — FC (57)
DPPS (VCA) — VCA (56)
Master Clock Selector
IC8-1
IC8-2
IC9-4
TGM (MCM) — MCM (43)
TGM (MCT) — MCT (45)
PS (SNS) — SNS (30)
OPS,DPPS,SPS,BAS (RES) — RES (60)
IC9-3
IC10-5
CN8
IC1
IC2
Initial Clear
TGM-CN7
IC1
Microcomputer (Main CPU)
15 MHz
X1
IC10-1
IC10-6
IC9-1
IC9-2
IC9-6
Z1
Z2
IC10-3
IC10-4
IC8-4
IC8-3
Low-Pass Filter (Tremolo Modulation Control)
IC11-2
IC11-1
IC2
Gate Array
X2
4 MHz
Low-Pass Filter (Master clock Control)
IC16-2
IC16-1
VR1 10KB
VR2 10KB
D-A Converter
IC3
Low-Pass Filter for Control Voltage
IC15-2
(Expression, Main Volume)
IC12-1
(Bass)
IC12-2
(Drum Percussion)
IC14-1
(U. String Ensemble)
IC14-2
(L. String Ensemble)
IC13-1
IC13-2
(Reverb)
IC15-1
(Record Signal)
(6) NVCV — MIX (NVCV)
(10) PVCV — BAS (PVCV)
(9) RVCV — DP (PVCV)
(1) USCV — PCT (USCV)
(2) LSCV — PCT (LSCV)
(3) VCCV
(7) ECCV — MIX (ECCV)
(8) SFR — MIX (SFR)
(59) AB0 — OPS,DPPS, ACC,SEL,DP
(58) IOS2 — ACC (IOS2)
(51) IOS4 — BAS (IOS4)
(52) IOS5 — SEL (IOS5)
(50) IOS7 — DP (IOS7)
(55) IOS8 — DPPS (IOS8)
(53) IOS9 — SPS (IOS9)
(61) DB0
(62) DB1
(63) DB2
(64) DB3
(65) DB4
(66) DB5
(67) DB6
(68) DB7
OPS,DPPS, ACC,SPS, SEL,BAS, DP
Z3 4.7K
Data Bus (DB0~DB7)
Address Bus (AB0~AB6)
CN8
TGM-CN7
Q6
Q5
Q4
D3
CN10
LKBS
UKBS
UKB, LKB CN1 CN1
CN9
TGM-CN8
ROM (32K Byte) IC4
ROM (32K Byte) IC5
RAM (8K Byte) IC6

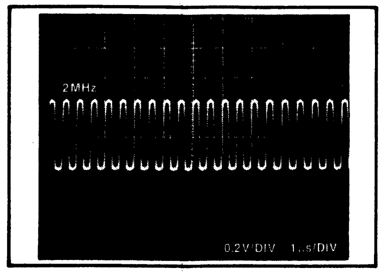
TGM TONE GENERATOR MODULE CIRCUIT BOARD

1 2 3 4 5 6 7 8 9

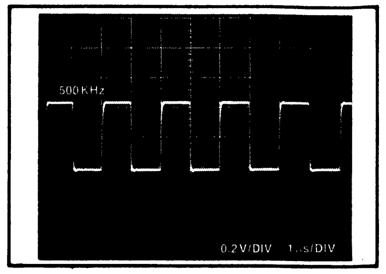
❶ Tab Master Clock (2MHz)



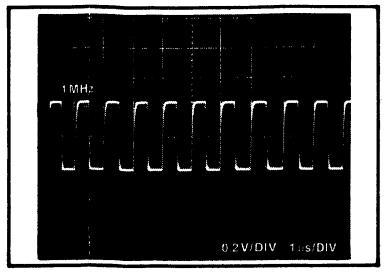
❷ Mono-Tone Master Clock



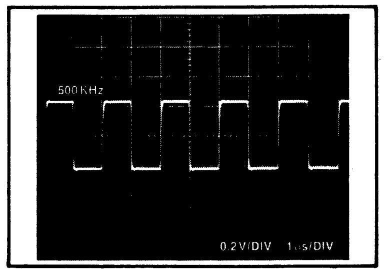
❸ Tab Clock (500KHz)



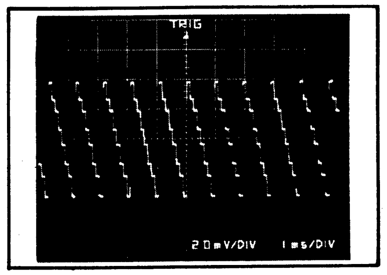
❹ CK (1MHz)



❺ Mono-Tone Clock (500KHz)

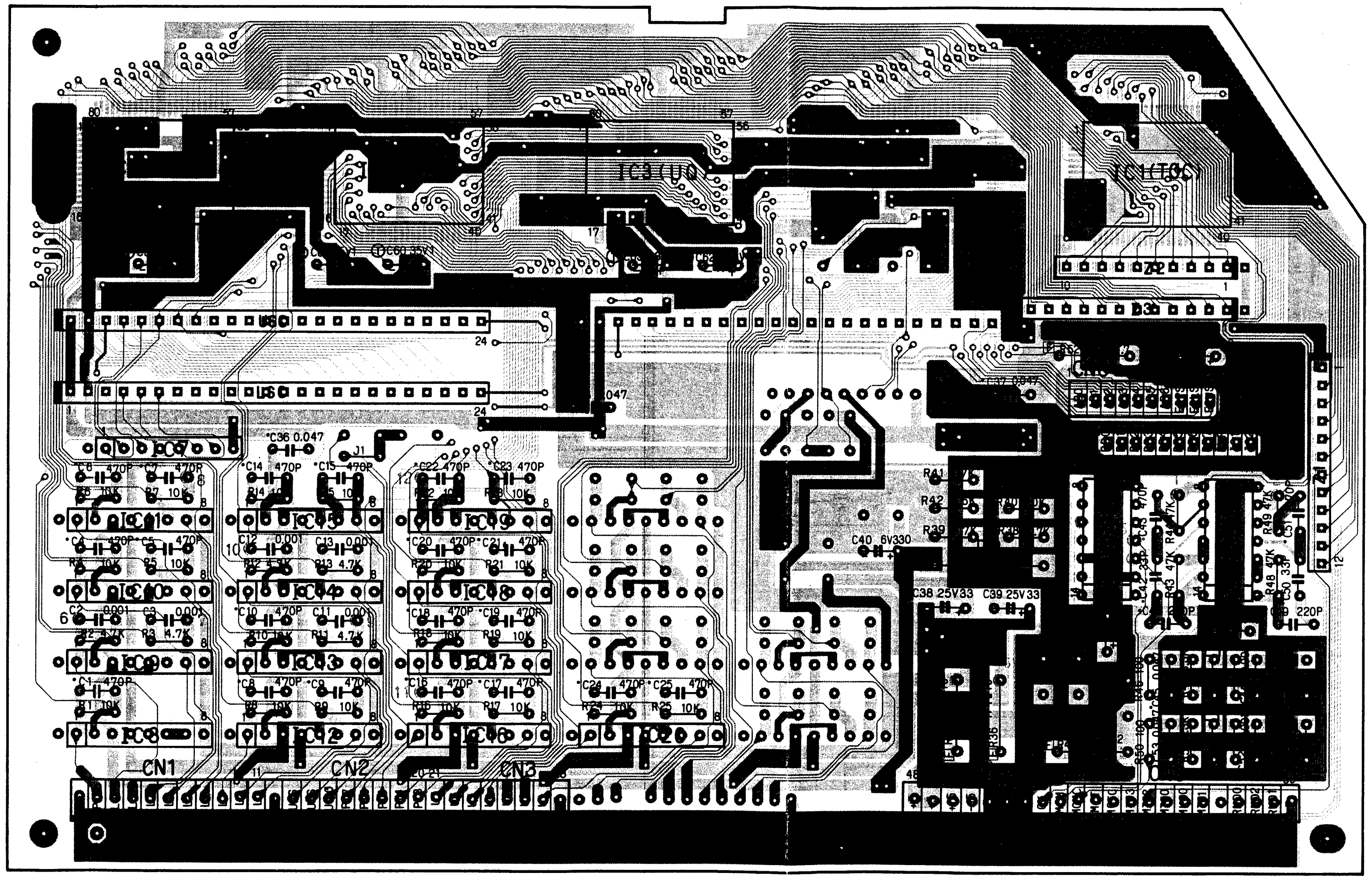


❻ L4S



- Lower Key C4

Circuit view on top of P.C.B



SXPG131521

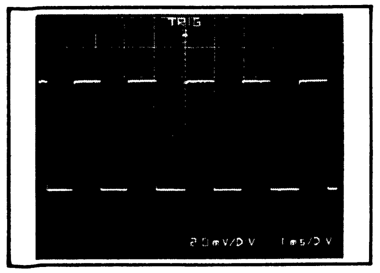
NOTES:
- IC'S

IC1:	SVIGUPD6303G
IC2, 3, 5:	SVIGUPD6304G
IC7~20:	SVIGM5218L
IC26:	SVIGTC40H393
IC27:	SVIGTC40H004

- DIODES

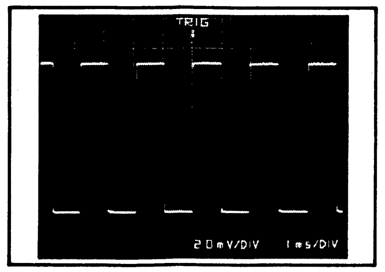
D1, 2:	MA165TA5
D3	SVDGRK14

❼ L80



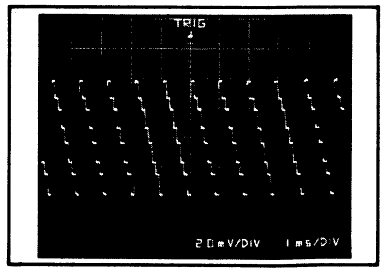
- Lower Key C4

❽ L4 (L1~L7)



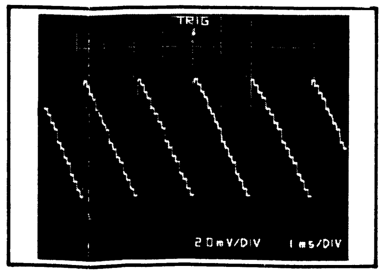
- Lower Tab Voices ....Flute 8′
- Lower Key C4

❾ U4S



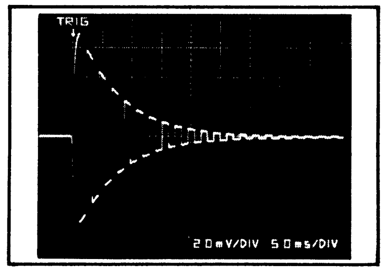
- Upper Key C4

❿ U8S



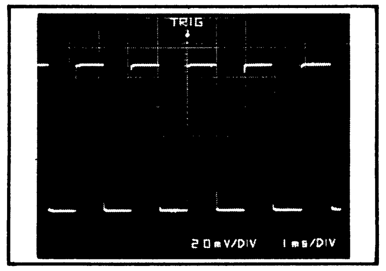
- Upper Key C4

⓫ PT5 (PT2~PT7)



- Percussive Tone ....4′
- Upper Key C4
- Envelope ....Short

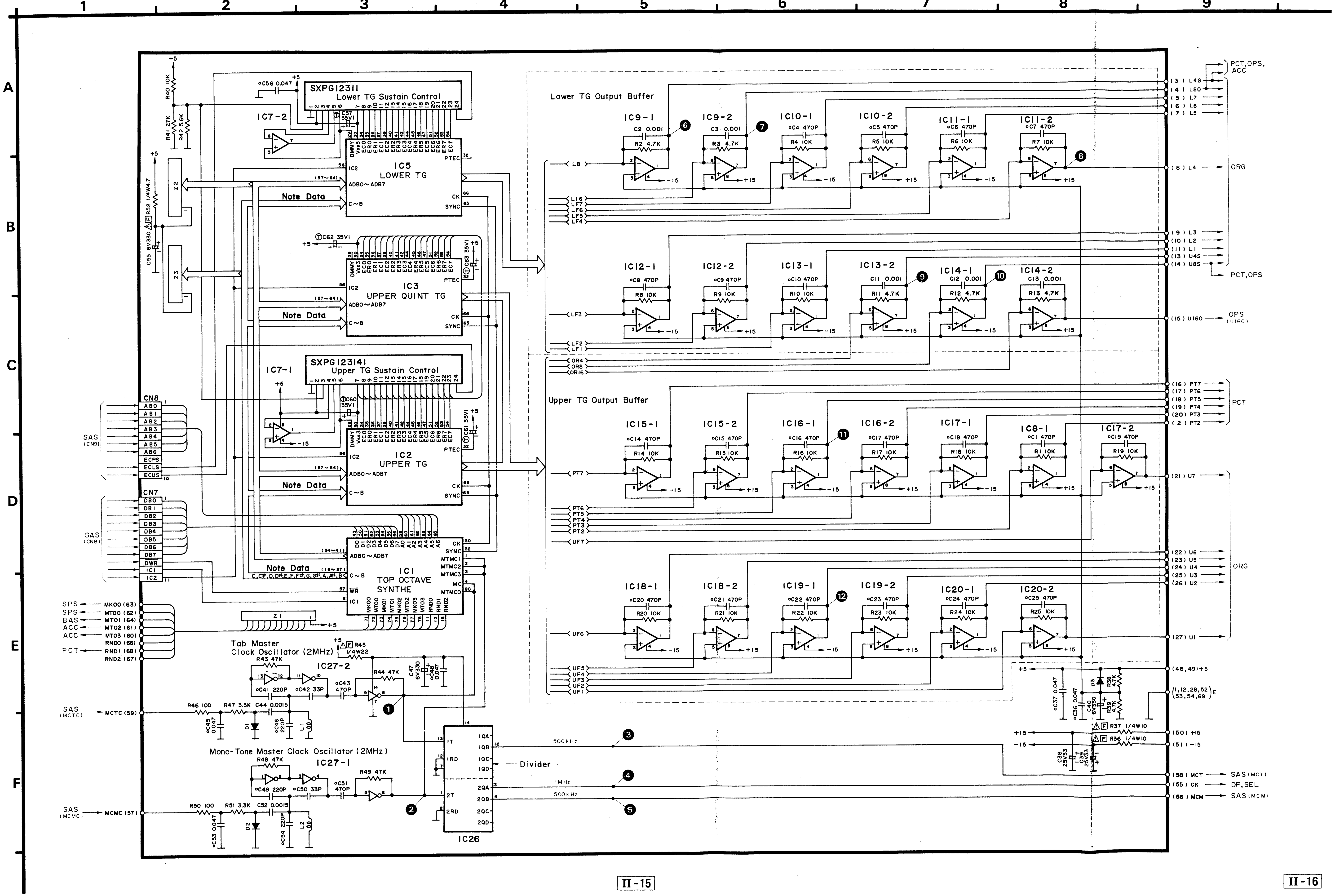
⓬ U4 (U1~U7)



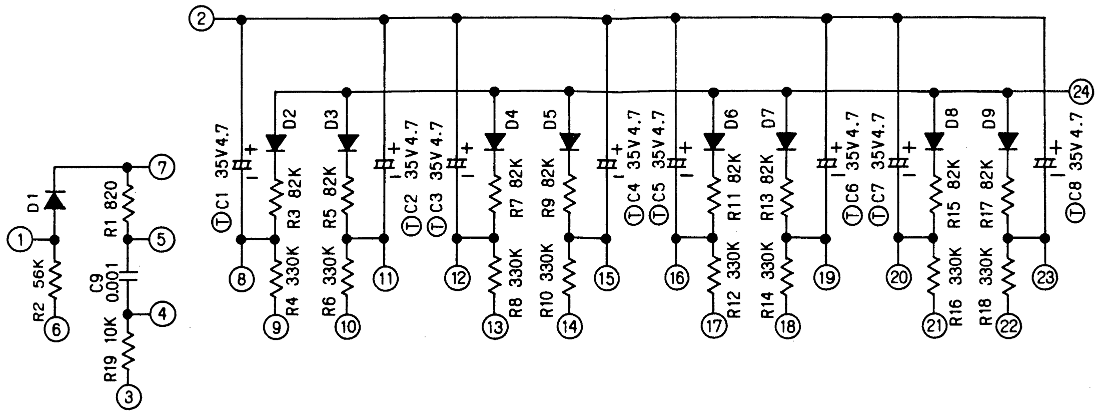
- Upper Tab Voices ....Flute 8′
- Upper Key C4

TGM

TONE GENERATOR MODULE CIRCUIT DIAGRAM

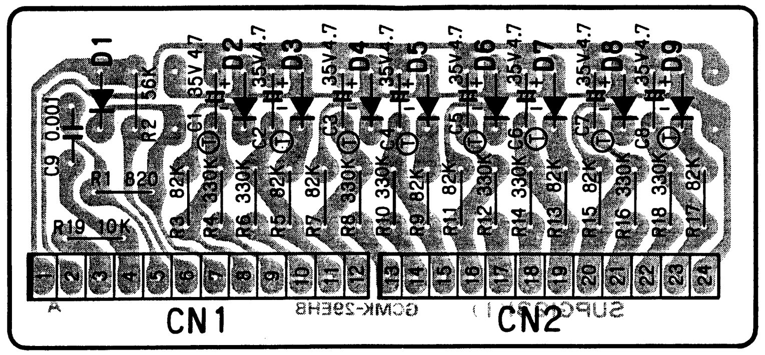

1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
SXPG12311
Lower TG Sustain Control
IC7-2
IC5
LOWER TG
Note Data
IC3
UPPER QUINT TG
SXPG123141
Upper TG Sustain Control
IC7-1
IC2
UPPER TG
IC1
TOP OCTAVE SYNTHE
CN8
CN7
SAS (CN9)
SAS (CN8)
Z1
Z2
Z3
SPS MK00 (63)
SPS MT00 (62)
BAS MT01 (64)
ACC MT02 (61)
ACC MT03 (60)
RND0 (66)
PCT RND1 (68)
RND2 (67)
Tab Master Clock Oscillator (2MHz)
IC27-2
Mono-Tone Master Clock Oscillator (2MHz)
IC27-1
SAS (MCTC) MCTC (59)
SAS (MCMC) MCMC (57)
IC26
Divider
500kHz
1MHz
500kHz
Lower TG Output Buffer
IC9-1
IC9-2
IC10-1
IC10-2
IC11-1
IC11-2
IC12-1
IC12-2
IC13-1
IC13-2
IC14-1
IC14-2
Upper TG Output Buffer
IC15-1
IC15-2
IC16-1
IC16-2
IC17-1
IC8-1
IC17-2
IC18-1
IC18-2
IC19-1
IC19-2
IC20-1
IC20-2
(3) L4S
(4) L80
(5) L7
(6) L6
(7) L5
PCT, OPS, ACC
(8) L4
ORG
(9) L3
(10) L2
(11) L1
(13) U4S
(14) U8S
PCT, OPS
(15) U160
OPS (U160)
(16) PT7
(17) PT6
(18) PT5
(19) PT4
(20) PT3
(2) PT2
PCT
(21) U7
(22) U6
(23) U5
(24) U4
(25) U3
(26) U2
ORG
(27) U1
(48, 49) +5
(1, 12, 28, 52, 53, 54, 69) E
(50) +15
(51) -15
(58) MCT SAS (MCT)
(55) CK DP, SEL
(56) MCM SAS (MCM)

USC UPPER TG SUSTAIN CONTROL CIRCUIT

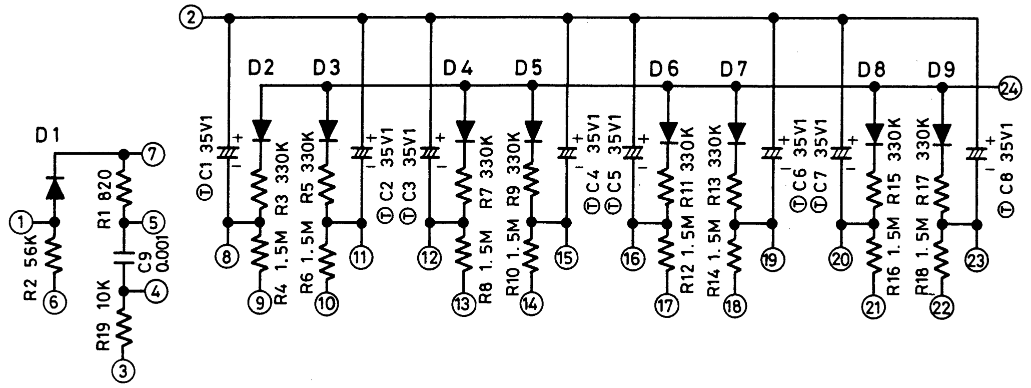

D1
R1 820
R2 56K
C9 0.001
R19 10K
C1 35V4.7
C2 35V4.7
C3 35V4.7
C4 35V4.7
C5 35V4.7
C6 35V4.7
C7 35V4.7
C8 35V4.7
D2
D3
D4
D5
D6
D7
D8
D9
R3 82K
R4 330K
R5 82K
R6 330K
R7 82K
R8 330K
R9 82K
R10 330K
R11 82K
R12 330K
R13 82K
R14 330K
R15 82K
R16 330K
R17 82K
R18 330K

SXPG123141

NOTES:
- DIODES
  D1~9: MA165TA5

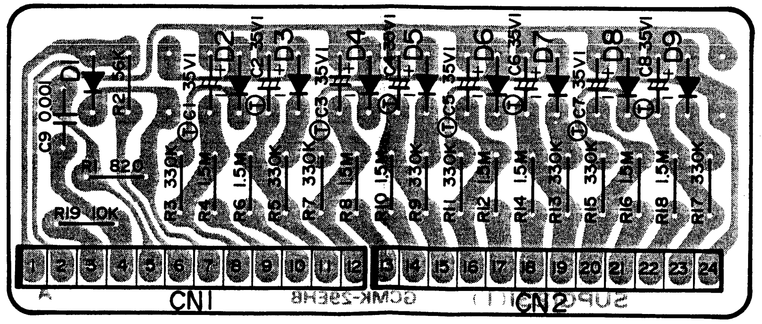

CN1
CN2
GCMK-29EHB

LSC LOWER TG SUSTAIN CONTROL CIRCUIT

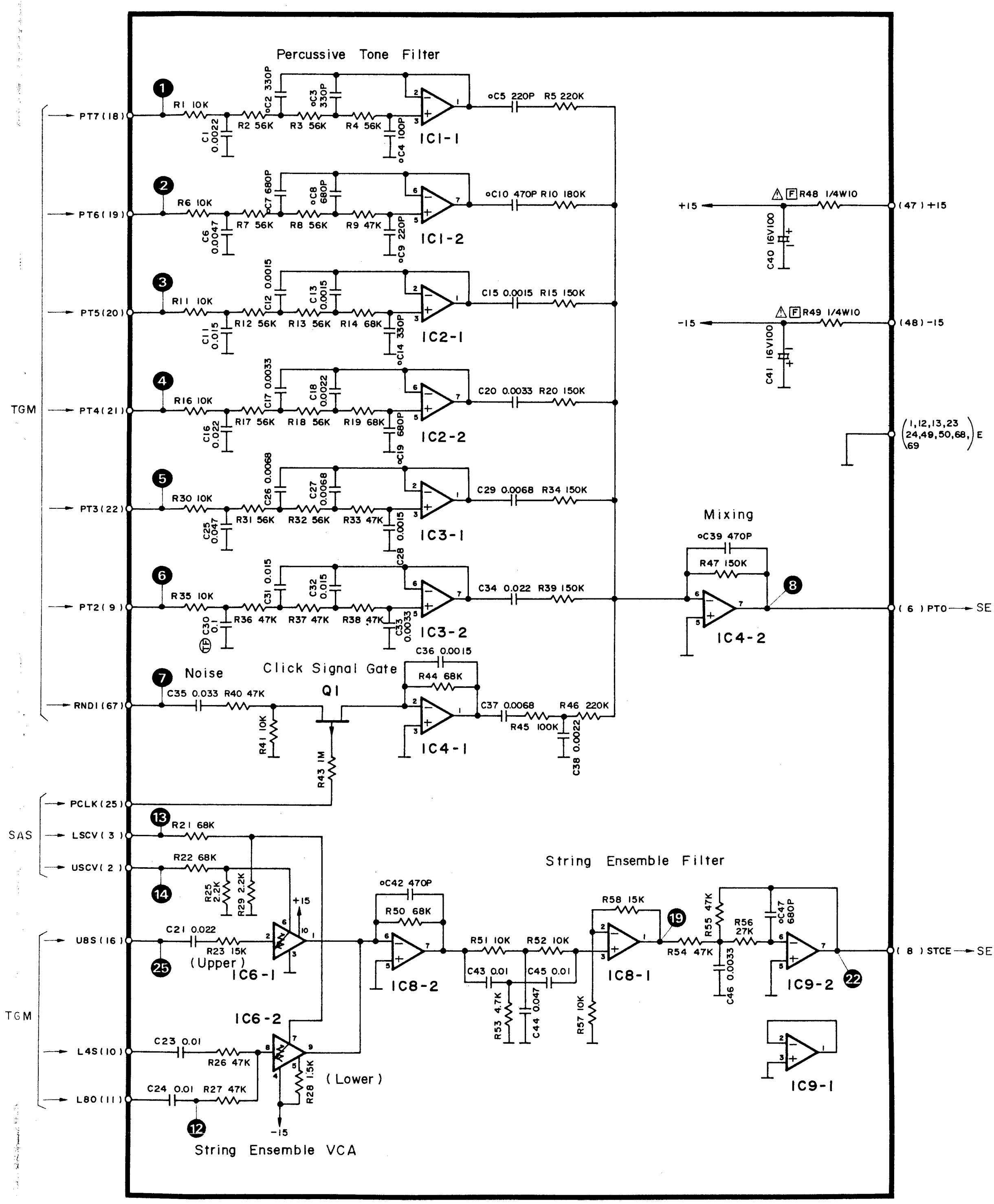

D1
R1 820
R2 56K
C9 0.001
R19 10K
C1 35V1
C2 35V1
C3 35V1
C4 35V1
C5 35V1
C6 35V1
C7 35V1
C8 35V1
D2
D3
D4
D5
D6
D7
D8
D9
R3 330K
R4 1.5M
R5 330K
R6 1.5M
R7 330K
R8 1.5M
R9 330K
R10 1.5M
R11 330K
R12 1.5M
R13 330K
R14 1.5M
R15 330K
R16 1.5M
R17 330K
R18 1.5M

SXPG12311

NOTES:
- DIODES
  D1~9: MA165TA5


CN1
CN2
GCMK-29EHB

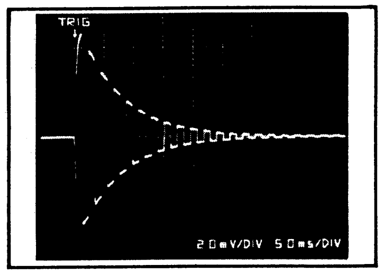
PCT PERCUSSIVE TONE CIRCUIT DIAGRAM


Percussive Tone Filter
TGM
PT7(18)
PT6(19)
PT5(20)
PT4(21)
PT3(22)
PT2(9)
RND1(67)
IC1-1
IC1-2
IC2-1
IC2-2
IC3-1
IC3-2
IC4-1
IC4-2
Mixing
Noise
Click Signal Gate
Q1
+15
-15
R48 1/4W10
R49 1/4W10
C40 16V100
C41 16V100
(47) +15
(48) -15
(6) PTO → SEL(PTO)
SAS
PCLK(25)
LSCV(3)
USCV(2)
UBS(16)
L4S(10)
L80(11)
(Upper)
(Lower)
IC6-1
IC6-2
IC8-1
IC8-2
IC9-1
IC9-2
String Ensemble Filter
String Ensemble VCA
(8) STCE → SEL(STCE)

PCT

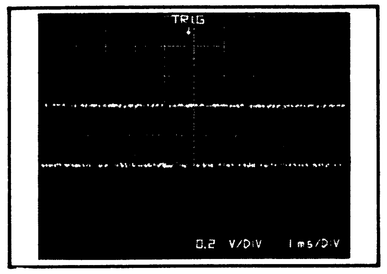
PERCUSSIVE TONE CIRCUIT BOARD

❸ PT5 (❶ PT7～❻ PT2)

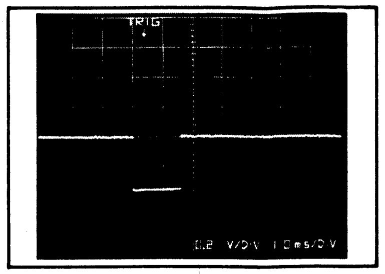


- Percussive Tone.................4'
- Upper Key..........................C4
- Envelope............................Short

❼ Noise Signal

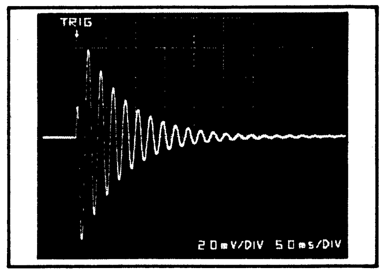


PCLK Terminal



- Percussive Tone.................Click
- Upper Key............................ON

❽



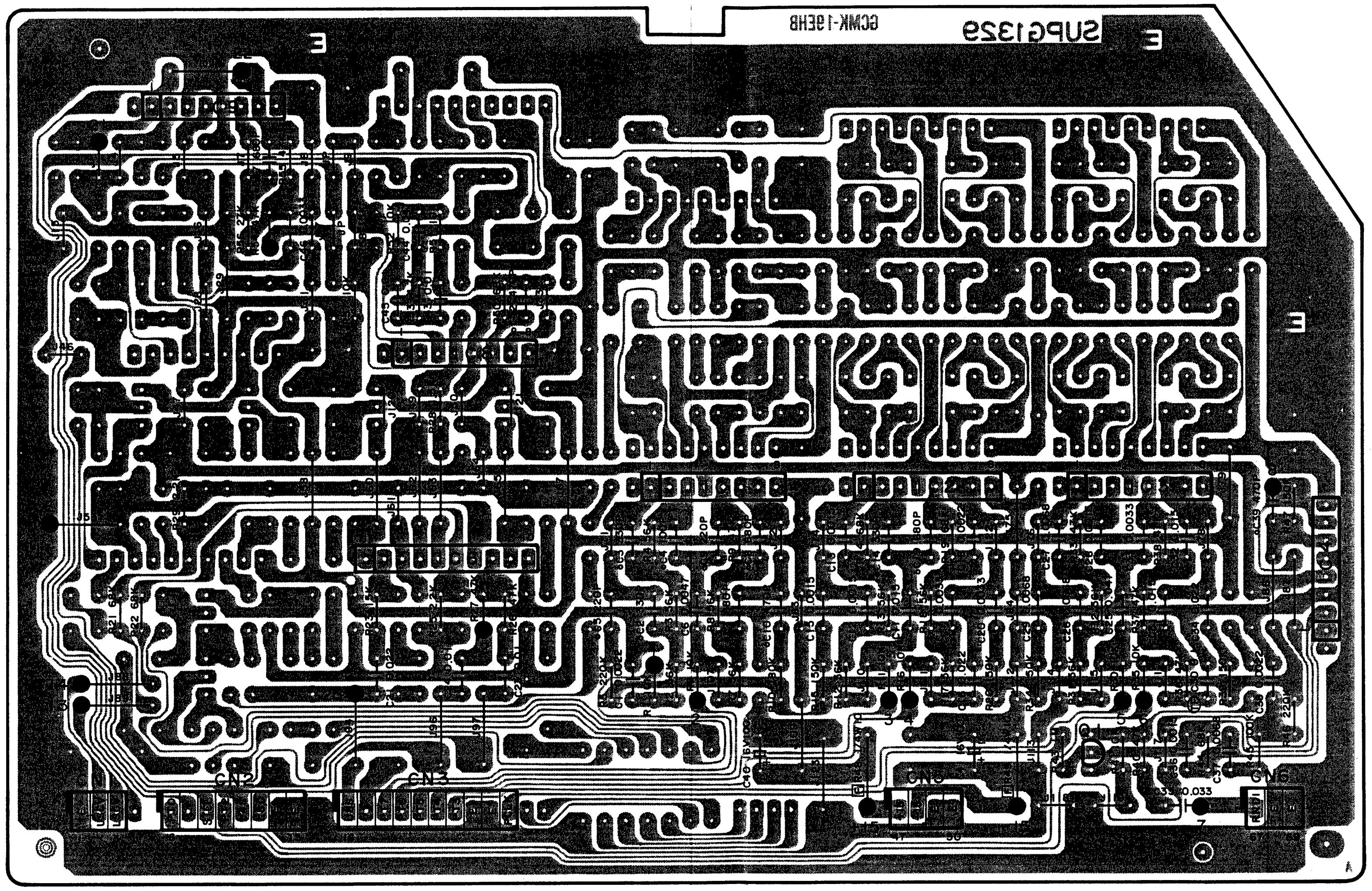
- Percussive Tone.................4'
- Upper Key............................C4
- Envelope.............................Short

⑬, ⑭

- U/L String Ensemble Volume Control

Step 1...................−1.8V
Step 2...................−1.4V
Step 3...................−0.8V
Step 4...................0V

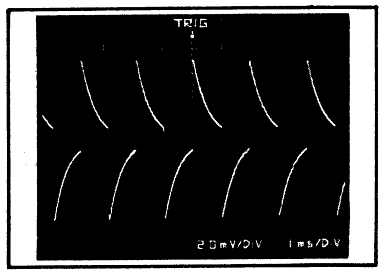
- U/L String Ensemble
- Volume...............................step 1～4



SXPG132911

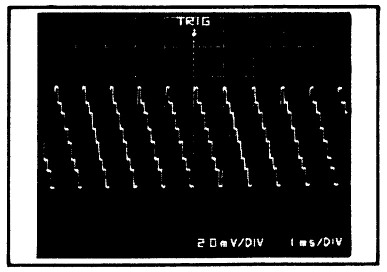
NOTES:
- IC'S
  IC1～4, 8, 9: SVIGM5218L
  IC6: SVIGM5241L
- TRANSISTOR
  Q1: 2SJ40CD

⑫



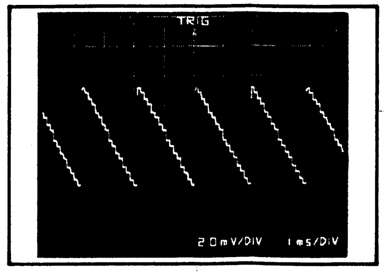
- L. String Ensemble ....ON
- Lower Key C4

L4S Terminal



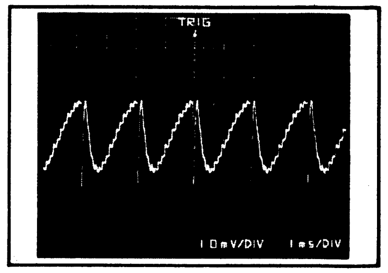
- L. String Ensemble ....ON
- Lower Key C4

㉕



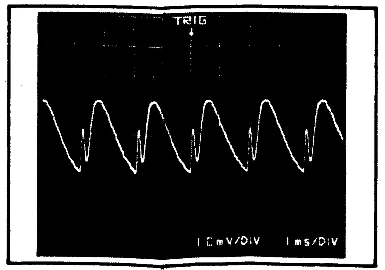
- U. String Ensemble............ON
- Upper Key............................C4

⑲



- U. String Ensemble............ON
- Upper Volume......................step 4
- Upper Key............................C4

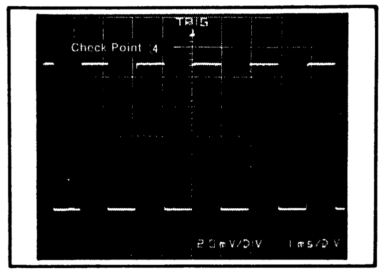
㉒



- U. String Ensemble............ON
- Upper Volume......................step 4
- Upper Key............................C4

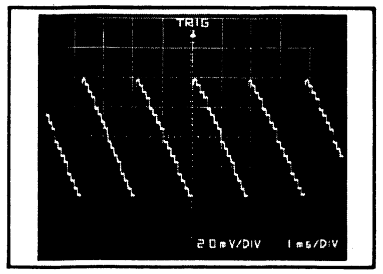
ORG ORGAN CIRCUIT BOARD

❶, ❷, ❸, ❹, ❺, ❻, ❼



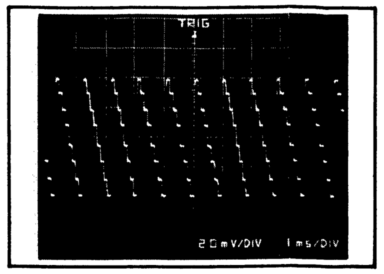
- Upper Tab............................Flute 8′
- Upper Key............................C4

❽



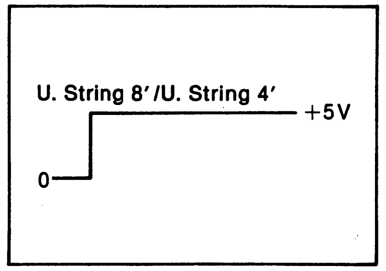
- Upper Tab............................String 8′
- Upper Key............................C4

❾



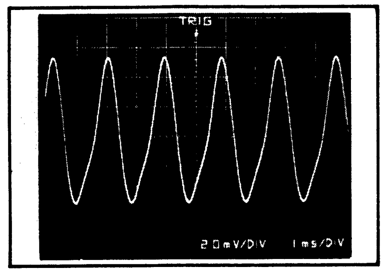
- Upper Tab
- Upper Key............................C4

US8C/US4C Terminal

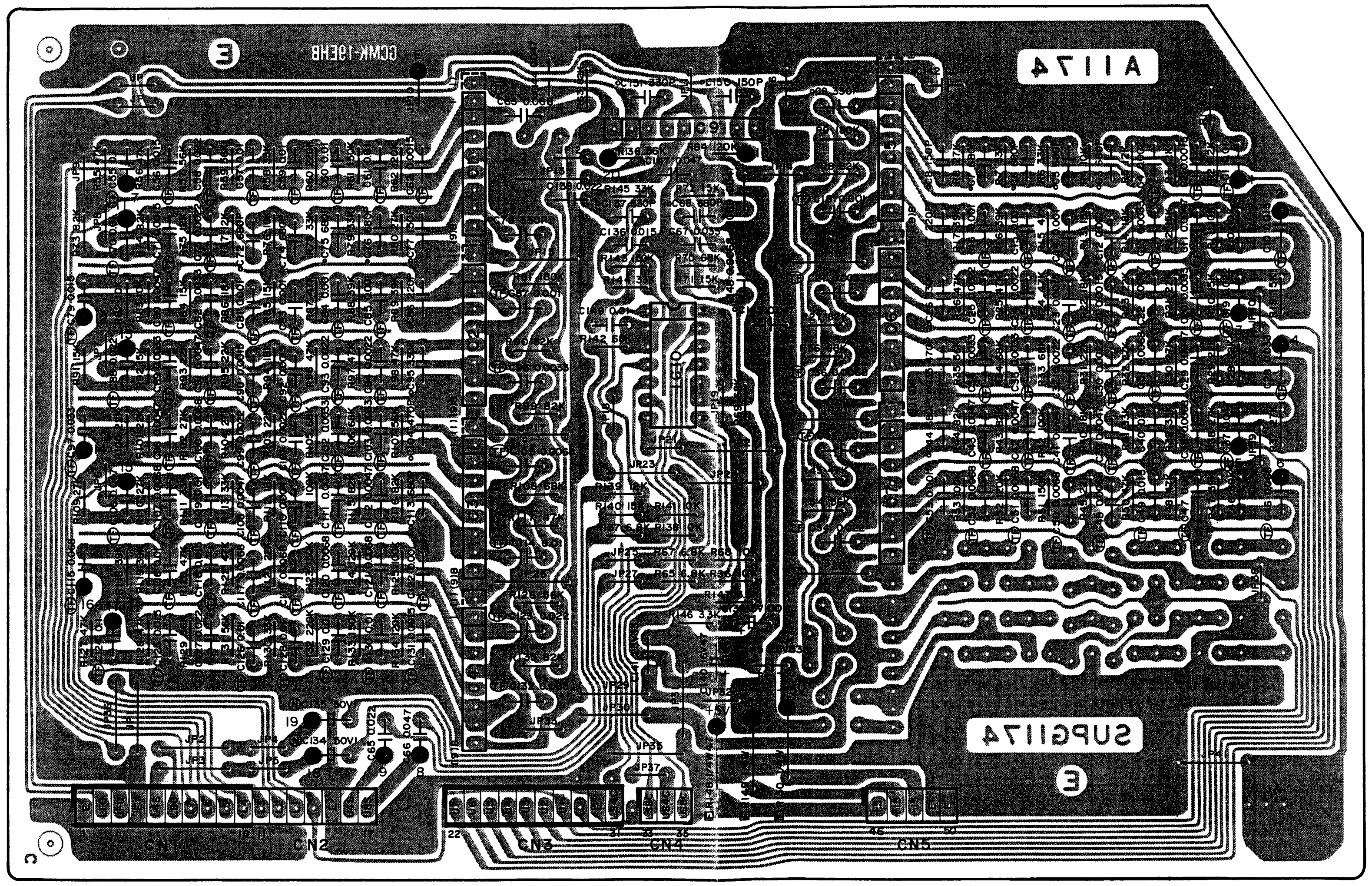

U. String 8′/U. String 4′
+5V
0

- Upper Tab...................String 8′/String 4′

❿



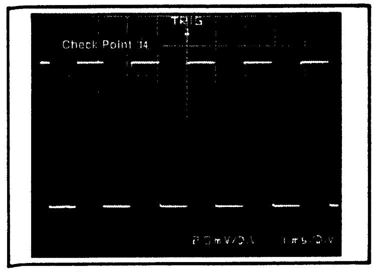
- Upper Tab............................Flute 8′
- Upper Key............................C4


GCMK-18EHB
A1174
SUPG1174
CN1
CN2
CN3
CN4
CN5

SXPG117461A

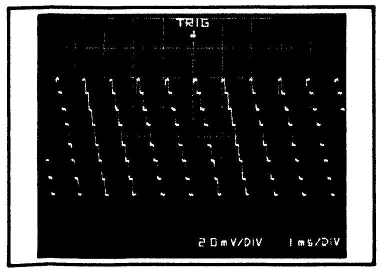
NOTES:
- IC'S
  - IC1~7, 9: SVIGM5218L
  - IC10: SVIGUPD4066B

⓫, ⓬, ⓭, ⓮, ⓯, ⓰, ⓱



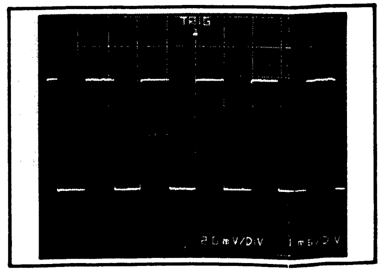
- Lower Tab ....Flute 8′
- Lower Key C4

⓲



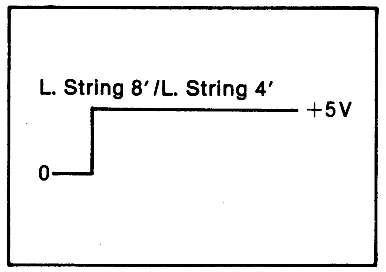
- Lower Tab
- Lower Key C4

⓳



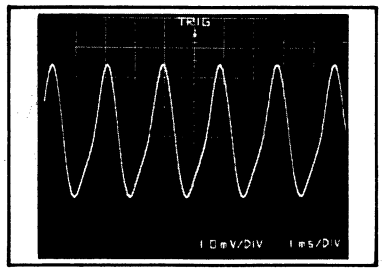
- Lower Tab ....String 8′
- Lower Key C4

LS8C/LS4C Terminal


L. String 8′/L. String 4′
+5V
0

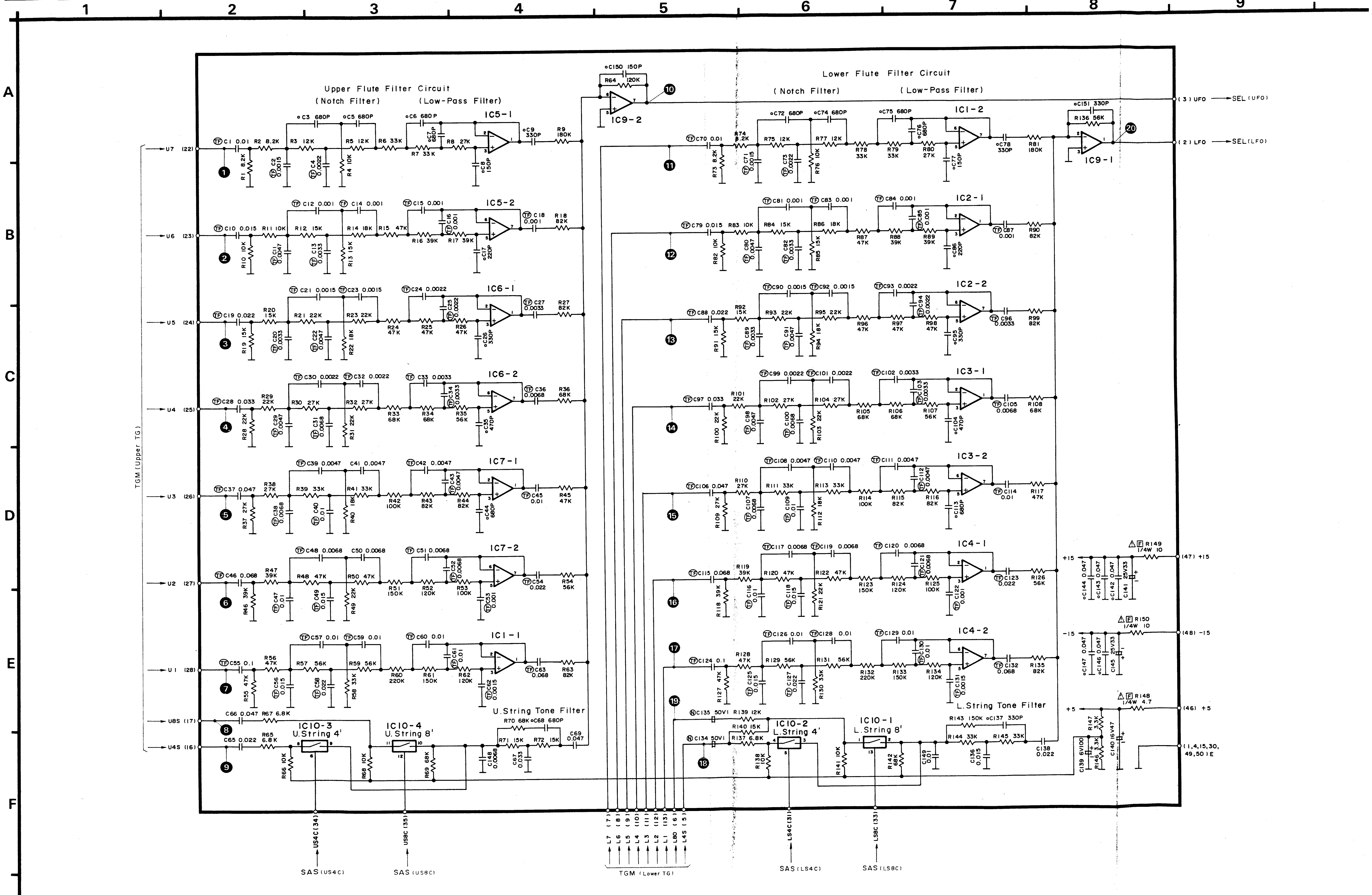
- Lower Tab ....String 8′/String 4′

⓴



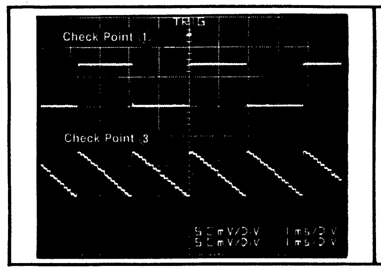
- Lower Tab ....Flute 8′
- Lower Key C4

ORGAN CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Upper Flute Filter Circuit
(Notch Filter)
(Low-Pass Filter)
Lower Flute Filter Circuit
(Notch Filter)
(Low-Pass Filter)
IC5-1
IC5-2
IC6-1
IC6-2
IC7-1
IC7-2
IC1-1
IC9-2
IC9-1
IC1-2
IC2-1
IC2-2
IC3-1
IC3-2
IC4-1
IC4-2
IC10-3
U.String 4'
IC10-4
U.String 8'
IC10-2
L.String 4'
IC10-1
L.String 8'
U.String Tone Filter
L.String Tone Filter
TGM (Upper TG)
U7 (22)
U6 (23)
U5 (24)
U4 (25)
U3 (26)
U2 (27)
U1 (28)
U8S (17)
U4S (16)
(3) UFO
SEL (UFO)
(2) LFO
SEL (LFO)
(47) +15
(48) -15
(46) +5
(1,4,15,30,49,50) E
+15
-15
+5
R149 1/4W 10
R150 1/4W 10
R148 1/4W 4.7
US4C (34)
SAS (US4C)
US8C (35)
SAS (US8C)
L7 (7)
L6 (8)
L5 (9)
L4 (10)
L3 (11)
L2 (12)
L1 (13)
L8O (6)
L4S (5)
TGM (Lower TG)
LS4C (31)
SAS (LS4C)
LS8C (33)
SAS (LS8C)
C150 150P
R64 120K
C151 330P
R136 56K

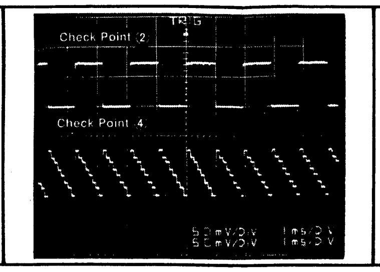
OPS ORCHESTRAL PRESETS CIRCUIT BOARD

❶, ❸



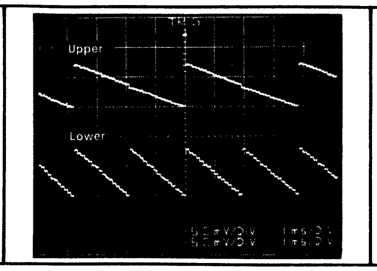
- U. Orchestral Presets
- Upper Key............................C4

❷, ❹



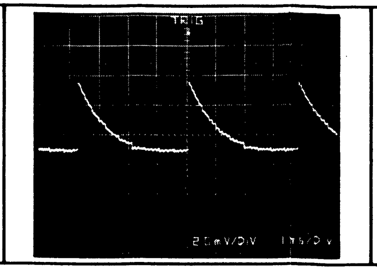
- L. Orchestral Presets
- Lower Key C4

❺



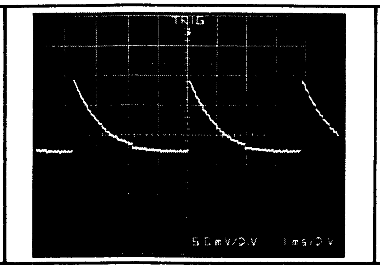
- U & L Orchestral Presets
- Upper or Lower Key C4

❻



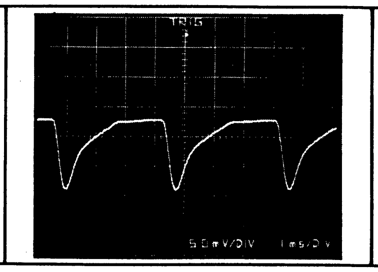
- Upper Orchestral Presets .....Trombone
- Upper Key............................C4

❼



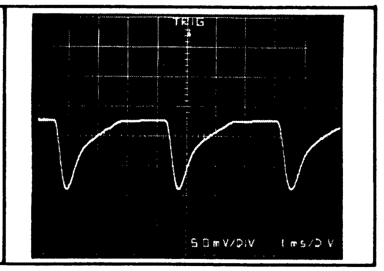
- Upper Orchestral Presets .....Trombone
- Upper Key............................C4

❽



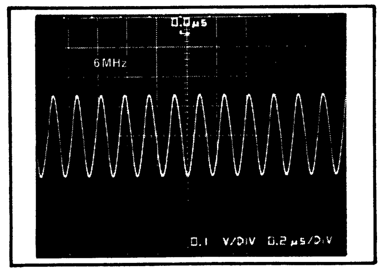
- Upper Orchestral Presets .....Trombone
- Upper Key............................C4

❾



- Upper Orchestral Presets .....Trombone
- Upper Key............................C4

❿ **6MHz**

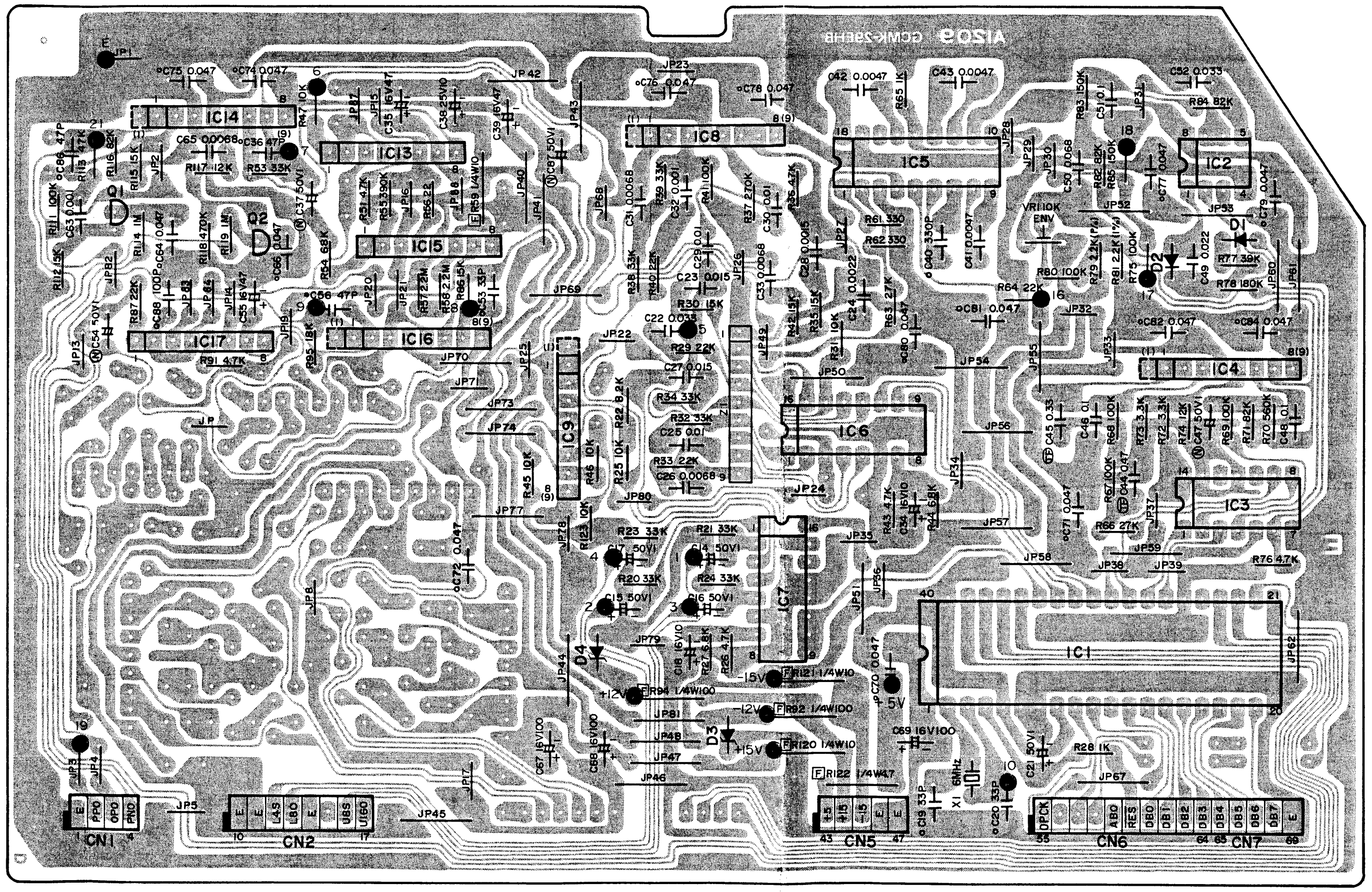


⑯ Resonance Control

Orchestral Presets	Voltage
Trombone	1.1V
Saxophone	0V
Accordion	0.55V
Clarinet	0.55V
Wah Brass	1.9V
Synthe Brass	0.8V

⑰ Initial Cut-off Fresquency Control

Orchestral Presets	Voltage
Trombone	−3.7V
Saxophone	−9.4V
Accordion	−9.8V
Clarinet	−6.0V
Wah Brass	−3.0V
Synthe Brass	−6.8V



SXPG120941A

NOTES:

- IC'S

IC1:	SVIGM8041145
IC2:	SVIGNJM082D
IC3:	SVIGTC40H004
IC4, 8, 9, 14, 16:	SVIGM5218L
IC5:	SVIGBA6704
IC6:	SVIGHD14051B
IC7:	SVIGTC4053BP
IC13, 17:	SVIGUPC1252H
IC15:	SVIGUPC1253H

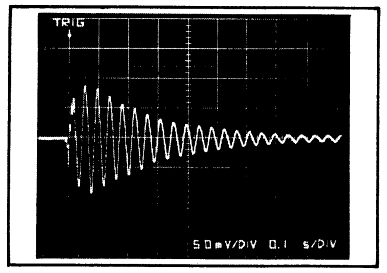
- TRANSISTORS

Q1, 2:	2SJ40CD

- DIODES

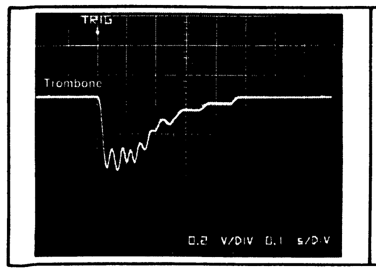
D1, 2:	MA165TA5
D3, 4:	MA4120M

㉑ Percussive Presets



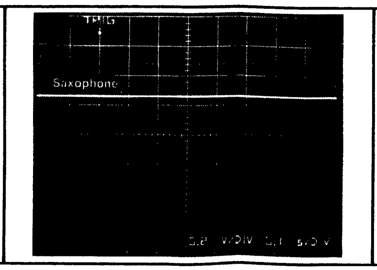
- Percussive Presets ....Piano
- Upper Key............................C4
- Sustain ....Short

⑱ Envelope Control
Trombone



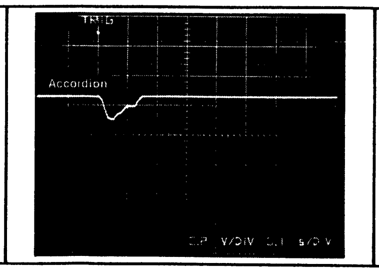
- Orchestral Presets ....Trombone
- Upper Key............................ON

⑱ Saxophone



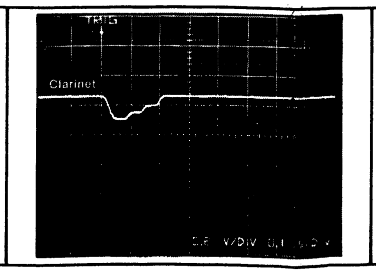
- Orchestral Presets ....Saxophone
- Upper Key............................ON

⑱ Accordion



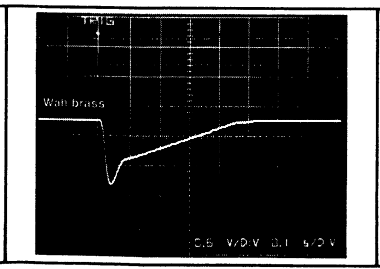
- Orchestral Presets ....Accordion
- Upper Key............................ON

⑱ Clarinet



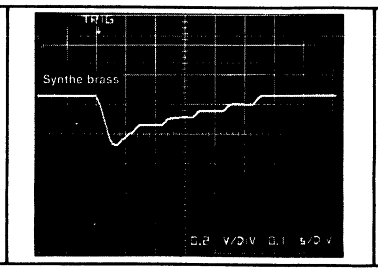
- Orchestral Presets ....Clarinet
- Upper Key............................ON

⑱ Wah Brass



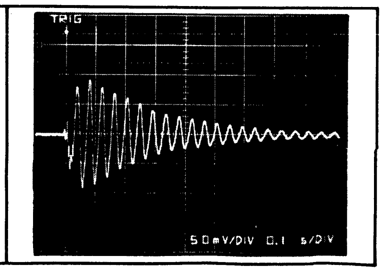
- Orchestral Presets ....Wah Brass
- Upper Key............................ON

⑱ Synthe Brass



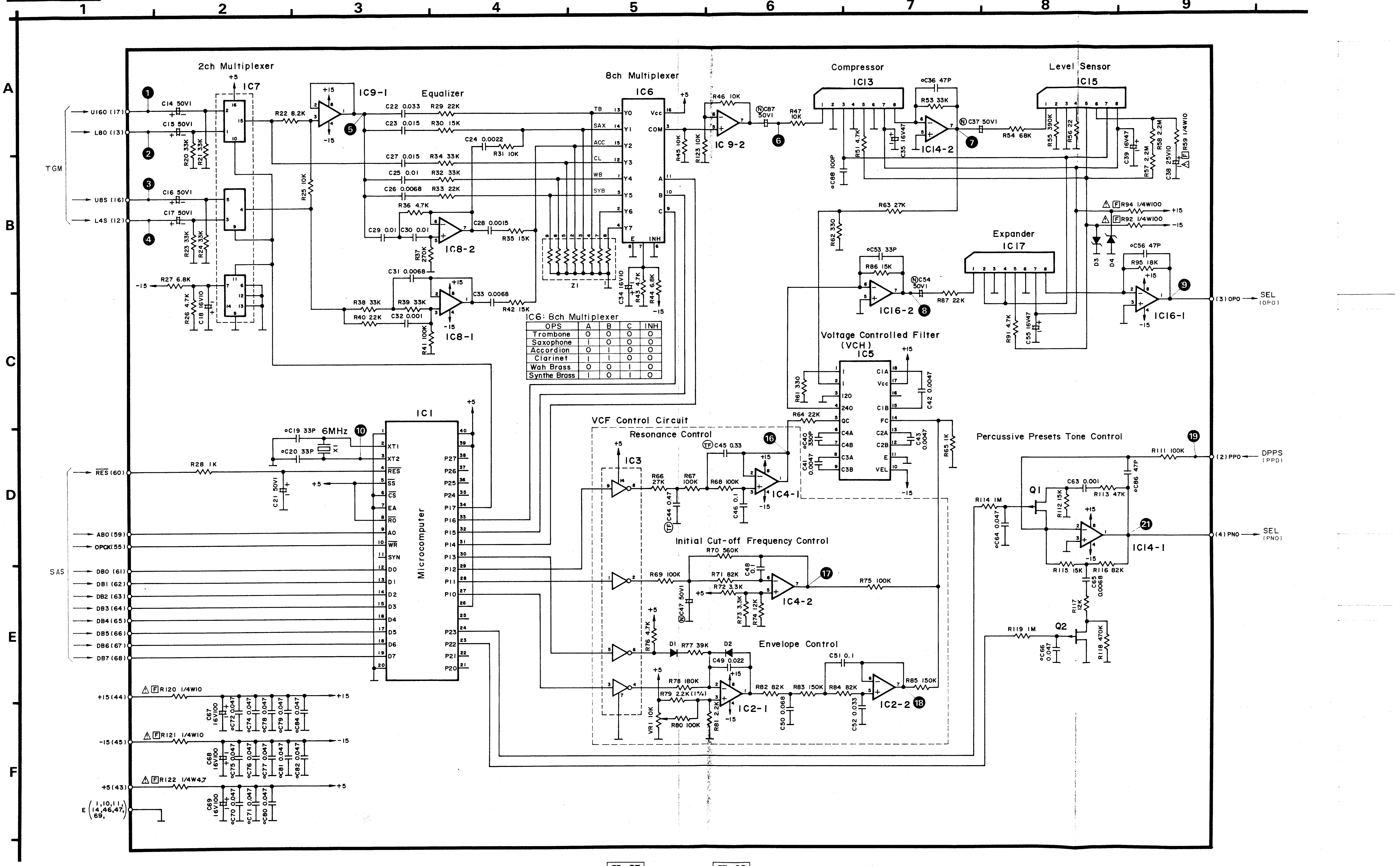
- Orchestral Presets ....Synthe Brass
- Upper Key............................ON

⑲ Percussive Presets



- Percussive Presets ....Piano
- Upper Key............................C4
- Sustain ....Short

ORCHESTRAL PRESETS CIRCUIT DIAGRAM

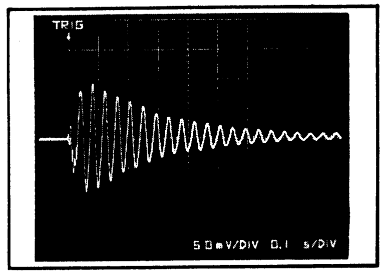

1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
2ch Multiplexer
IC7
IC9-1
Equalizer
8ch Multiplexer
IC6
IC 9-2
Compressor
IC13
IC14-2
Level Sensor
IC15
TGM
U160 (17)
L80 (13)
U8S (16)
L4S (12)
C14 50V1
C15 50V1
C16 50V1
C17 50V1
R20 33K
R21 33K
R23 33K
R24 33K
R22 8.2K
R25 10K
R27 6.8K
R26 4.7K
C18 16V10
C22 0.033
R29 22K
C23 0.015
R30 15K
C24 0.0022
R31 10K
C27 0.015
R34 33K
C25 0.01
R32 33K
C26 0.0068
R33 22K
R36 4.7K
C28 0.0015
R35 15K
C29 0.01
C30 0.01
R37 270K
IC8-2
C31 0.0068
C33 0.0068
R42 15K
R38 33K
R39 33K
R40 22K
C32 0.001
R41 100K
IC8-1
TB
SAX
ACC
CL
WB
SYB
Z1
C34 16V10
R43 4.7K
R44 6.8K
R46 10K
C87 50V1
R47 10K
R45 10K
R123 10K
C88 100P
R51 4.7K
C35 16V47
C36 47P
R53 33K
C37 50V1
R54 68K
R55 390K
R56 22
C39 16V47
R57 2.2M
R58 2.2M
C38 25V10
R59 1/4W10
R63 27K
R62 330
R94 1/4W100
R92 1/4W100
D3
D4
Expander
IC17
C53 33P
R86 15K
C54 50V1
R87 22K
IC16-2
C56 47P
R95 18K
IC16-1
(3) OPO
SEL (OPO)
R91 4.7K
C55 16V47
Voltage Controlled Filter (VCH)
IC5
R61 330
C42 0.0047
R64 22K
C40 330P
C41 0.0047
C43 0.0047
R65 1K
IC1
C19 33P
6MHz
C20 33P
R28 1K
C21 50V1
Microcomputer
RES (60)
AB0 (59)
OPCK (55)
DB0 (61)
DB1 (62)
DB2 (63)
DB3 (64)
DB4 (65)
DB5 (66)
DB6 (67)
DB7 (68)
SAS
XT1
XT2
RES
SS
CS
EA
RD
A0
WR
SYN
D0
D1
D2
D3
D4
D5
D6
D7
P27
P26
P25
P24
P17
P16
P15
P14
P13
P12
P11
P10
P23
P22
P21
P20
VCF Control Circuit
Resonance Control
IC3
C45 0.33
R66 27K
R67 100K
R68 100K
C44 0.47
C46 0.1
IC4-1
Initial Cut-off Frequency Control
R70 560K
R69 100K
R71 82K
R72 3.3K
C48 0.1
C47 50V1
R73 3.3K
R74 12K
IC4-2
R75 100K
Envelope Control
R76 4.7K
D1
R77 39K
D2
C49 0.022
R78 180K
R79 2.2K (1%)
R80 100K
R81 2.2K
VR1 10K
IC2-1
R82 82K
R83 150K
R84 82K
C50 0.068
C51 0.1
C52 0.033
IC2-2
R85 150K
Percussive Presets Tone Control
R111 100K
(2) PPO
DPPS (PPD)
Q1
C63 0.001
R112 15K
R113 47K
C86 47P
R114 1M
C64 0.047
IC14-1
(4) PNO
SEL (PNO)
R115 15K
R116 82K
C65 0.0068
R117 12K
R119 1M
Q2
C66 0.047
R118 470K
+15 (44)
R120 1/4W10
-15 (45)
R121 1/4W10
+5 (43)
R122 1/4W4.7
C67 16V100
C68 16V100
C69 16V100
C72 0.047
C74 0.047
C78 0.047
C79 0.047
C84 0.047
C75 0.047
C76 0.047
C77 0.047
C81 0.047
C82 0.047
C70 0.047
C71 0.047
C80 0.047
E (1,10,11, 14,46,47, 69,)
+5
+15
-15

IC6: 8ch Multiplexer

OPS	A	B	C	INH
Trombone	0	0	0	0
Saxophone	1	0	0	0
Accordion	0	1	0	0
Clarinet	1	1	0	0
Wah Brass	0	0	1	0
Synthe Brass	1	0	1	0

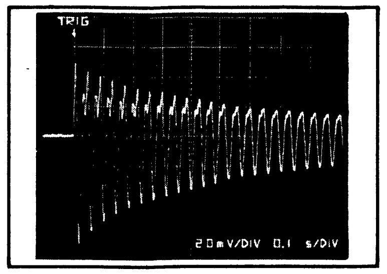
DPPS DIGITAL PERCUSSIVE PRESETS CIRCUIT BOARD

❶ Piano



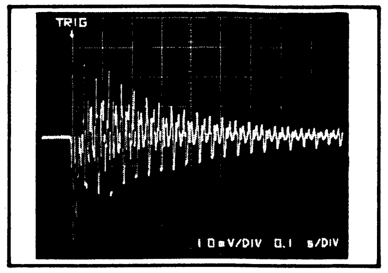
- Percussive Presets ....Piano
- Sustain ....Short (off)
- Upper Key............................C4

❶ Electric Piano



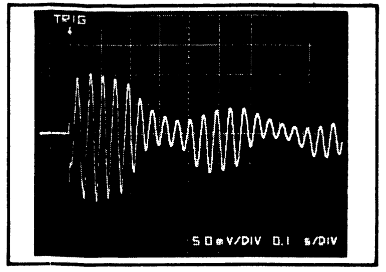
- Percussive Presets ....Electric Piano
- Sustain ....Short (off)
- Upper Key............................C4

❶ Harpsichord



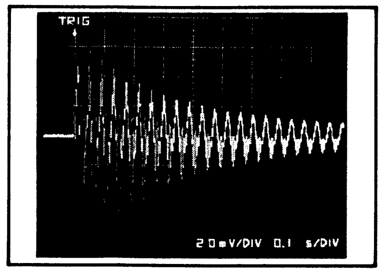
- Percussive Presets ....Harpsichord
- Sustain ....Short (off)
- Upper Key............................C4

❶ Vibraphone



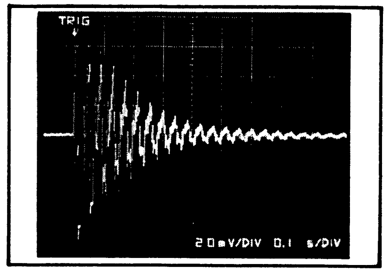
- Percussive Presets ....Vibraphone
- Sustain ....Short (off)
- Upper Key............................C4

❶ Guitar



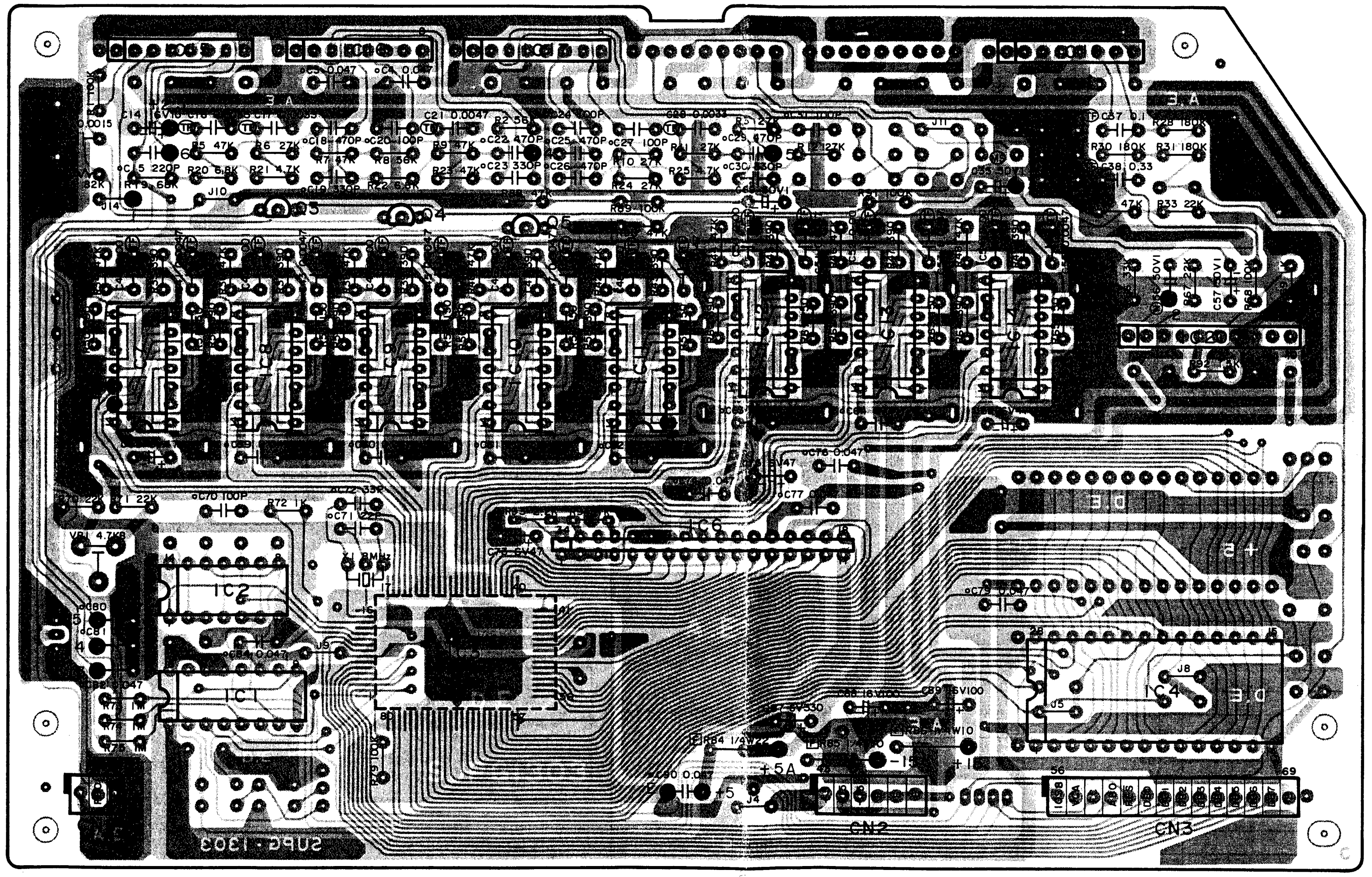
- Percussive Presets ....Guitar
- Sustain ....Short (off)
- Upper Key............................C4

❶ Banjo



- Percussive Presets ....Banjo
- Sustain ....Short (off)
- Upper Key............................C4

Circuit view on top of P.C.B


IC1
IC2
IC4
IC6
VR1 4.7KB
CN2
CN3
+5A
+5
-15
SVPG-1303

SXPG130331

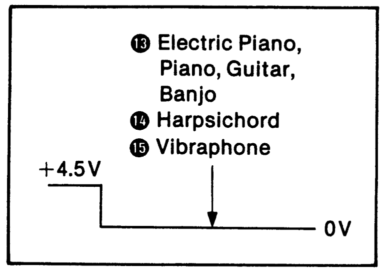
NOTES:
- IC'S

IC1:	MN40174B
IC2:	SVIGTC40H002
IC3:	SVIGUPD6312
IC4:	SVIG1000C063
IC6:	EHMMS466
IC7~14:	SVIGUPD4066B
IC15~17, 19:	SVIGM5218L
IC20:	SVIGM5241L

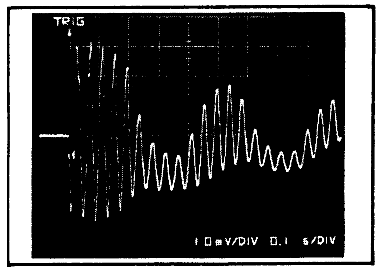
- TRANSISTORS

Q3~5:	2SJ40CD

⓭,⓮,⓯

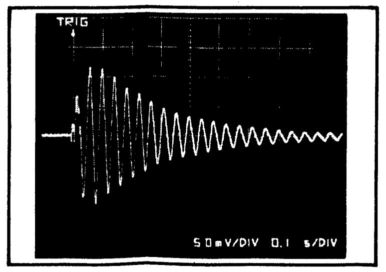

⓭ Electric Piano, Piano, Guitar, Banjo
⓮ Harpsichord
⓯ Vibraphone
+4.5V
0V

❷ Vibraphone



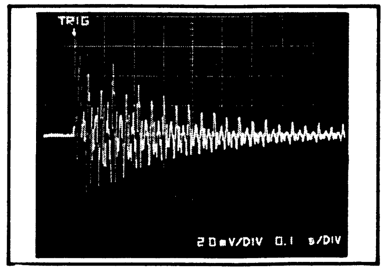
- Percussive Presets ....Vibraphone
- Sustain ....Short (off)
- Upper Key............................C4

❸,❹



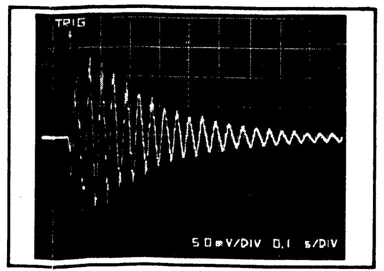
- Percussive Presets ....Piano
- Sustain ....Short (off)
- Upper Key............................C4

❺ Harpsichord



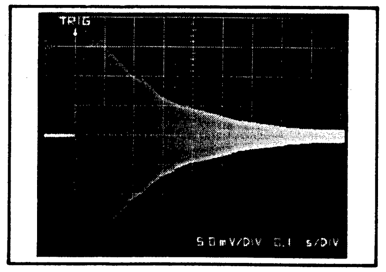
- Percussive Presets ....Harpsichord
- Sustain ....Short (off)
- Upper Key............................C4

❻



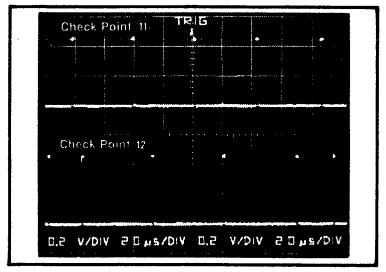
- Percussive Presets ....Piano
- Sustain ....Short (off)
- Upper Key............................C4

❽



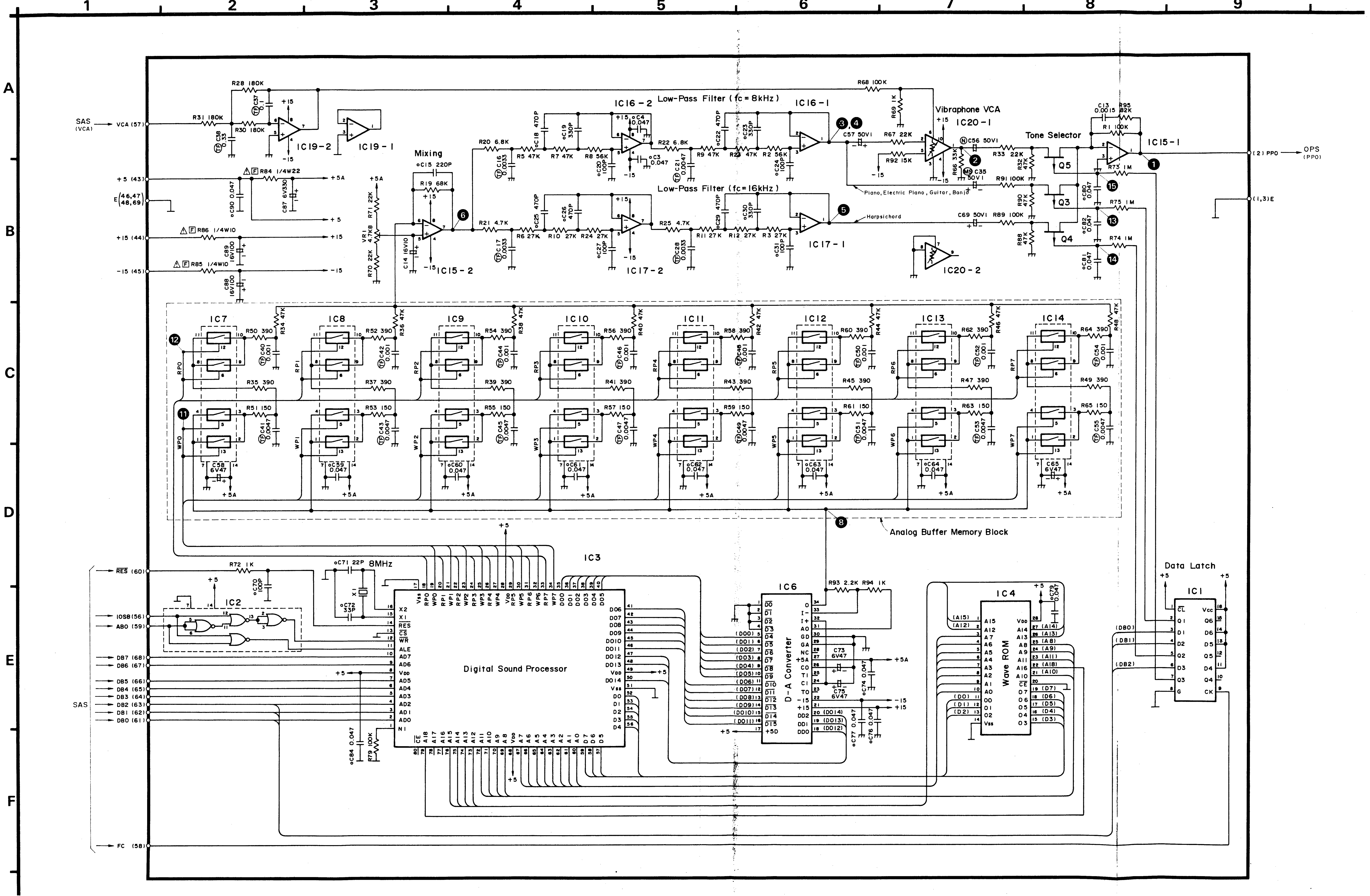
- Percussive Presets ....Piano
- Sustain ....Short (off)
- Upper Key............................C4

⓫,⓬



DPPS

DIGITAL PERCUSSIVE PRESETS CIRUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
SAS (VCA)
VCA (57)
+5 (43)
E (46,47) (48,69)
+15 (44)
-15 (45)
R28 180K
R31 180K
R30 180K
IC19-2
IC19-1
Mixing
C15 220P
R19 68K
VR1
IC15-2
Low-Pass Filter (fc=8kHz)
IC16-2
IC16-1
Low-Pass Filter (fc=16kHz)
IC17-2
IC17-1
R68 100K
R69 1K
Vibraphone VCA
IC20-1
IC20-2
Tone Selector
Q5
Q3
Q4
IC15-1
(2) PPO
OPS (PPO)
(1,3) E
Piano, Electric Piano, Guitar, Banjo
Harpsichord
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
RP0
RP1
RP2
RP3
RP4
RP5
RP6
RP7
WP0
WP1
WP2
WP3
WP4
WP5
WP6
WP7
Analog Buffer Memory Block
IC3
8MHz
X1
IC2
RES (60)
IOSB (56)
AB0 (59)
DB7 (68)
DB6 (67)
DB5 (66)
DB4 (65)
DB3 (64)
DB2 (63)
DB1 (62)
DB0 (61)
SAS
FC (58)
Digital Sound Processor
IC6
D-A Converter
R93 2.2K
R94 1K
IC4
Wave ROM
Data Latch
IC1
+5
+5A
+15
-15

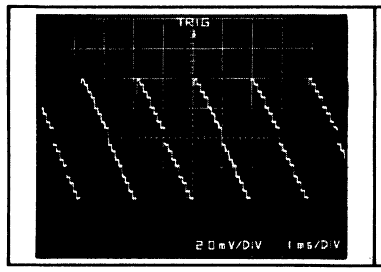
ACC

ACCOMPANIMENT CIRCUIT BOARD

1 2 3 4 5 6 7 8 9

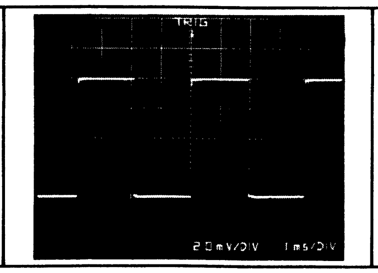
A

❶ Rhythmic



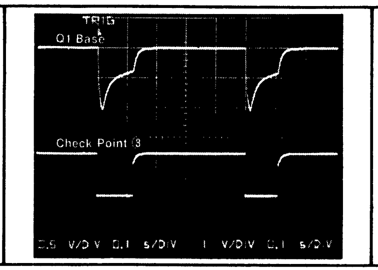
- Lower Key C3

❷ Rhythmic



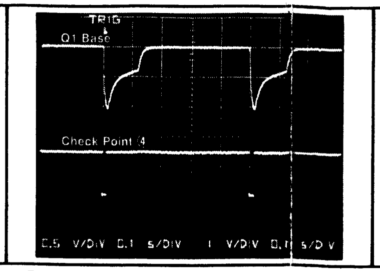
- Lower Key C3

❸ Rhythmic



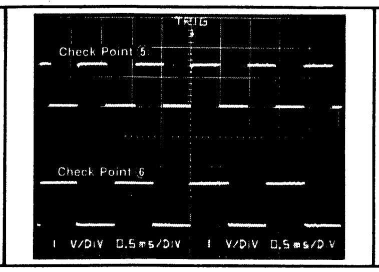
- Rhythm ....Bossanova I
- Rhythmic ....Pattern I
- Lower Key C3

❹ Rhythmic



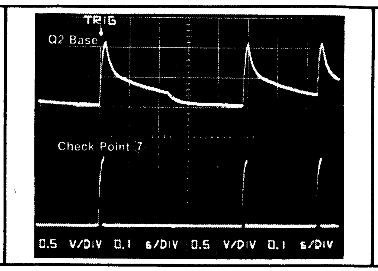
- Rhythm ....Bossanova I
- Rhythmic ....Pattern I
- Lower Key C3

❺, ❻ Melodic



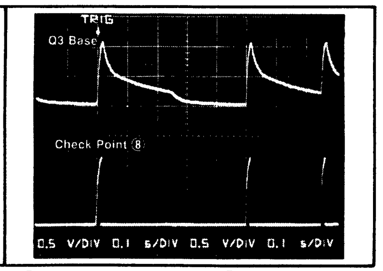
- Rhythm ....Bossanova I
- Melodic..............................Pattern I
- Lower Key C3

❼ Melodic



- Rhythm ....Bossanova I
- Melodic..............................Pattern I
- Lower Key C3

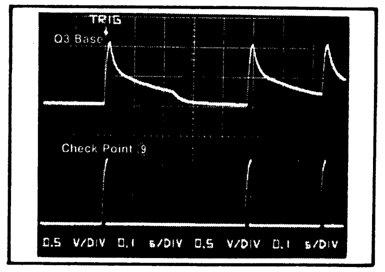
❽ Melodic



- Rhythm ....Bossanova I
- Melodic..............................Pattern I
- Lower Key C3

B

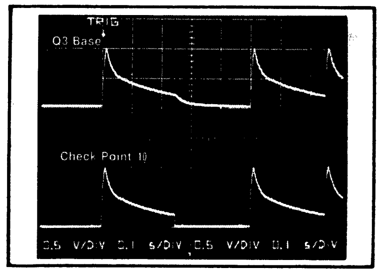
❾ Melodic



- Rhythm ....Bossanova I
- Melodic..............................Pattern I
- Lower Key C3

C

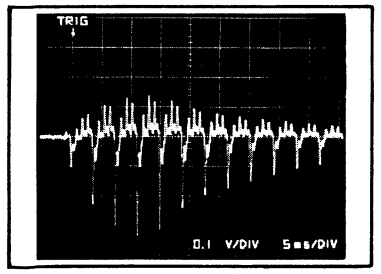
❿ Melodic



- Rhythm ....Bossanova I
- Melodic..............................Pattern I
- Lower Key C3

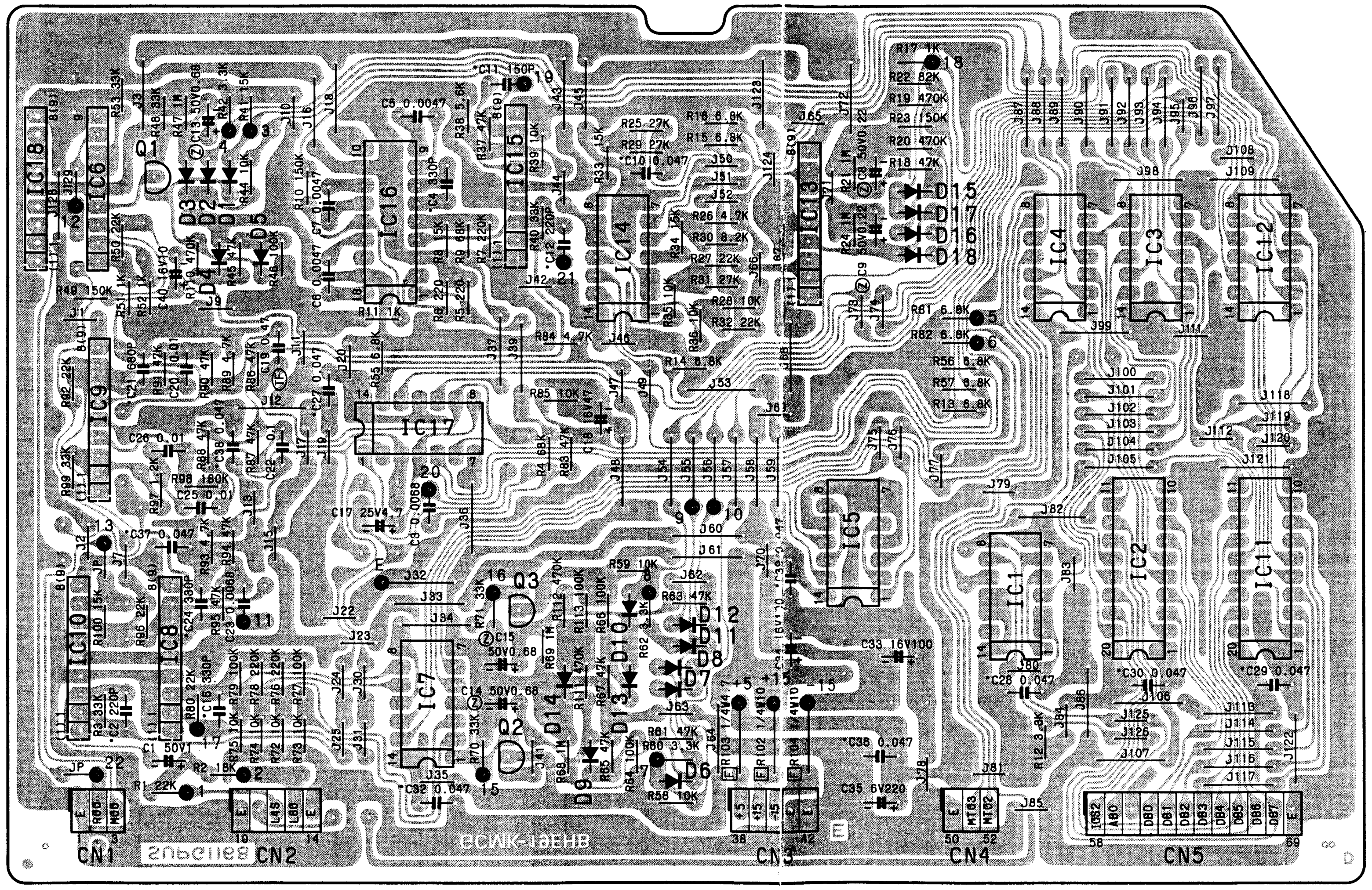
D

⓫ Melodic



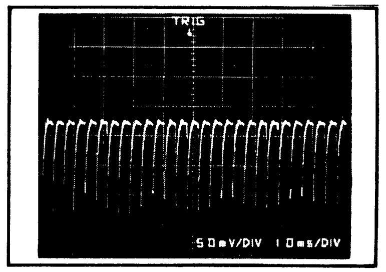
- Rhythm ....Disco I
- Melodic..............................Pattern I
- Lower Key C3

E



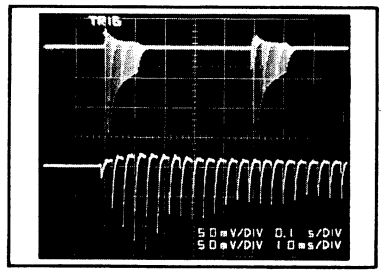
SXPG116861

㉑ Rhythmic



- Rhythm ....Bossanova I
- Rhythmic ....Pattern I
- Lower Key C3

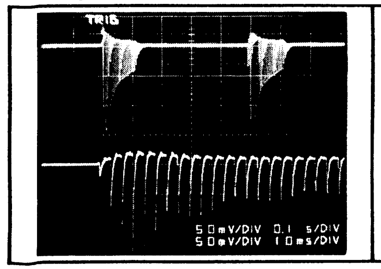
㉒ Rhythmic



- Rhythm ....Bossanova I
- Rhythmic ....Pattern I
- Lower Key C3

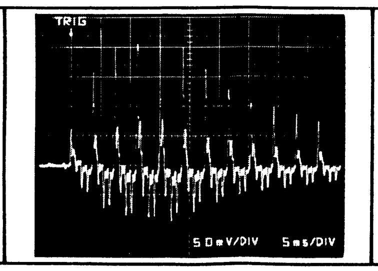
F

⓬ Rhythmic



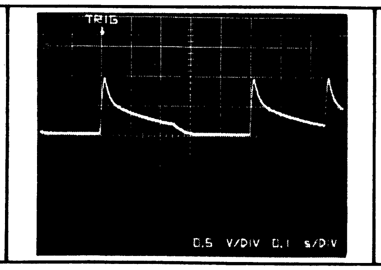
- Rhythm ....Bossanova I
- Rhythmic ....Pattern I
- Lower Key C3

⓭ Melodic



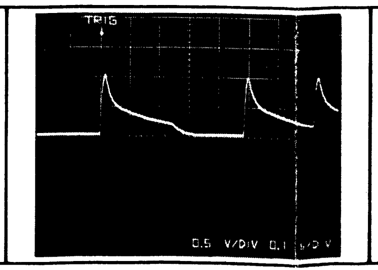
- Rhythm ....Disco I
- Melodic..............................Pattern I
- Lower Key C3

⓯ Melodic



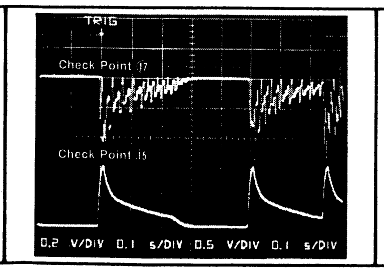
- Rhythm ....Bossanova I
- Melodic..............................Pattern I
- Lower Key C3

⓰ Melodic



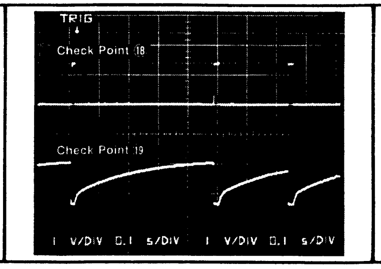
- Rhythm ....Bossanova I
- Melodic..............................Pattern I
- Lower Key C3

⓱ Melodic



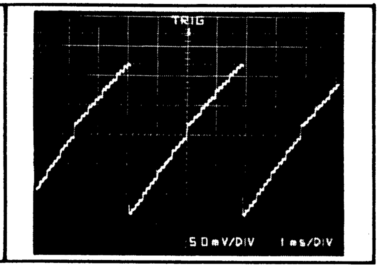
- Rhythm ....Bossanova I
- Melodic..............................Pattern I
- Lower Key C3

⓲, ⓳ Rhythmic



- Rhythm ....Bossanova I
- Rhythmic ....Pattern I
- Lower Key C3

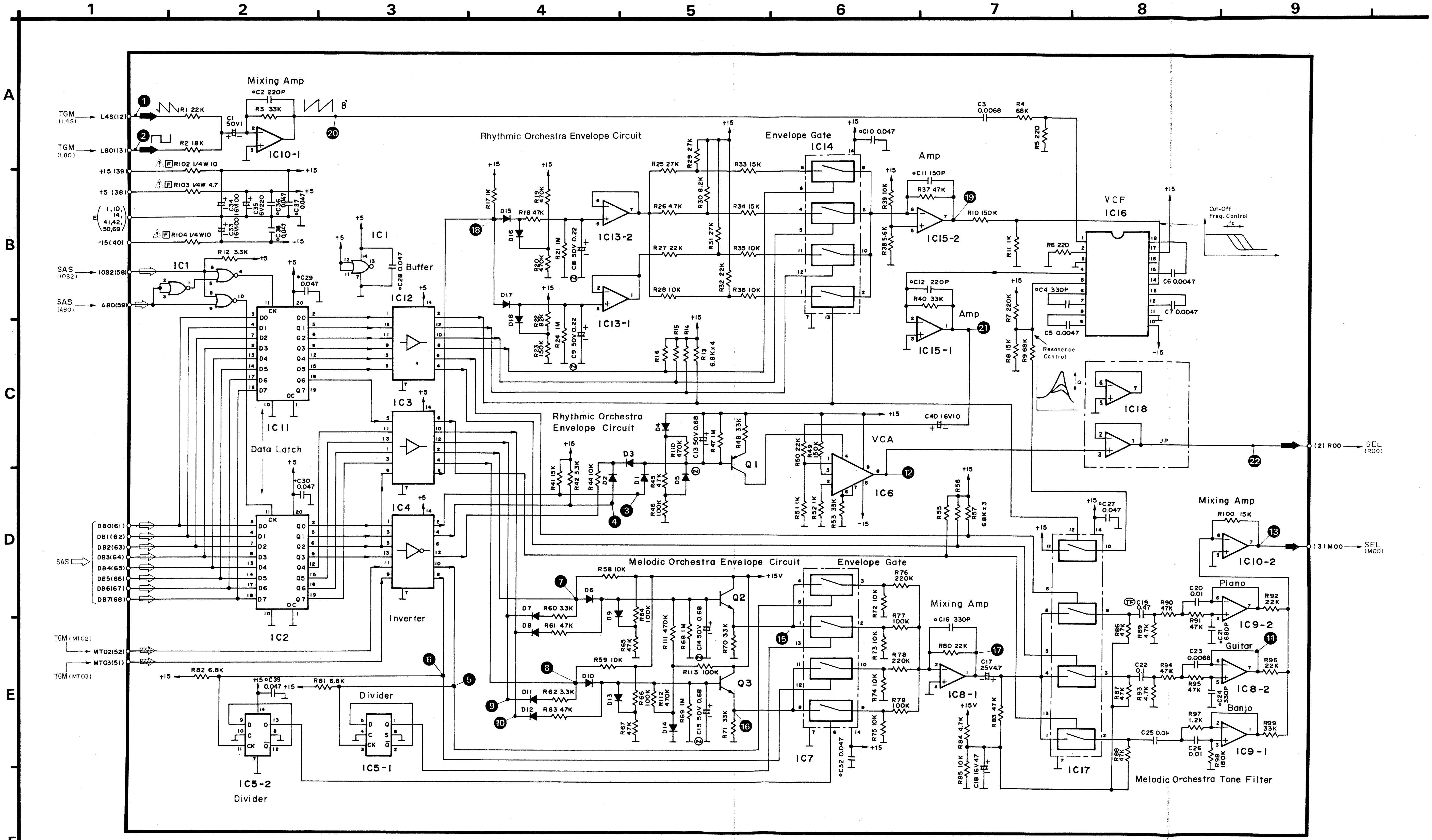
⓴ Rhythmic



- Lower Key C3

ACC

ACCOMPANIMENT CIRCUIT DIAGRAM



1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Mixing Amp
TGM (L4S) L4S(12)
TGM (L80) L80(13)
R1 22K
R2 18K
C1 50V1
C2 220P
R3 33K
IC10-1
+15 (39)
+5 (38)
E (1, 10, 14, 41, 42, 50, 69)
-15 (40)
F R102 1/4W10
F R103 1/4W 4.7
F R104 1/4W10
SAS (10S2) 10S2(58)
SAS (AB0) AB0(59)
IC1
R12 3.3K
Buffer
IC12
IC11
Data Latch
IC3
IC2
IC4
Inverter
SAS
DB0(61)
DB1(62)
DB2(63)
DB3(64)
DB4(65)
DB5(66)
DB6(67)
DB7(68)
TGM (MT02) MT02(52)
TGM (MT03) MT03(51)
R82 6.8K
R81 6.8K
IC5-2
Divider
IC5-1
Divider
Rhythmic Orchestra Envelope Circuit
IC13-2
IC13-1
Envelope Gate
IC14
Amp
IC15-2
IC15-1
VCF
IC16
Cut-Off Freq. Control
fc
Resonance Control
Q
IC18
JP
(2) R00 — SEL (R00)
Rhythmic Orchestra Envelope Circuit
VCA
IC6
Q1
Melodic Orchestra Envelope Circuit
Envelope Gate
IC7
Q2
Q3
Mixing Amp
IC8-1
IC17
Mixing Amp
R100 15K
IC10-2
(3) M00 — SEL (M00)
Piano
IC9-2
Guitar
IC8-2
Banjo
IC9-1
Melodic Orchestra Tone Filter

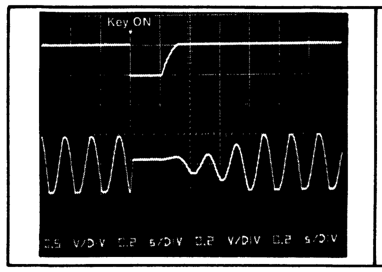
NOTES:

- IC'S

IC1:	SVIGTC40H002	IC6:	SVIGBA6110	• TRANSISTORS	
IC2, 11:	SVIGTC40H374	IC7, 14, 17:	SVIGUPD4066B	Q1:	2SA933STRS
IC3, 12:	SVIGM53217	IC8~10, 13, 15, 18:	SVIGM5218L	Q2, 3:	2SC2320LFG
IC4:	SVIGM53216			• DIODES	
IC5:	SVIGTC4013BP	IC16:	SVIGBA6704	D1~18:	MA165TA5

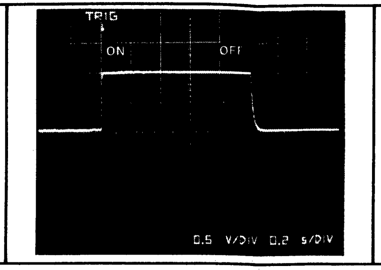
SPS SOLO PRESETS CIRCUIT BOARD

❶, ❷ Delay Vibrato



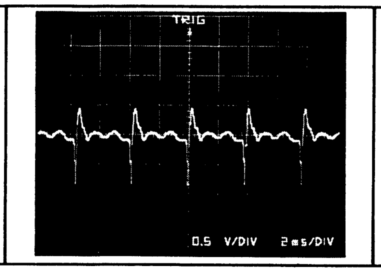
- Solo Presets........................Trombone
- Upper Key............................ON

❸ Envelope Control



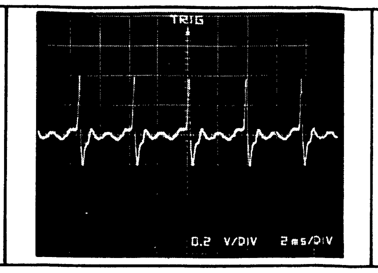
- Solo Presets........................Trombone
- Upper Key............................ON-OFF

❹ Trombone



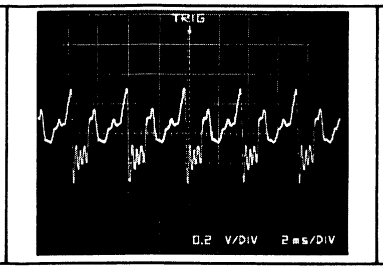
- Solo Presets........................Trombone
- Upper Key............................C4

❺ Trombone



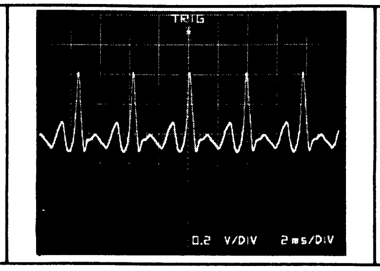
- Solo Presets........................Trombone
- Upper Key............................C4

❺ Saxophone



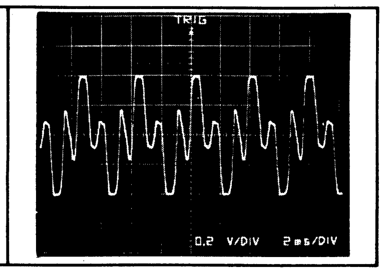
- Solo Presets........................Saxophone
- Upper Key............................C4

❺ Trumpet

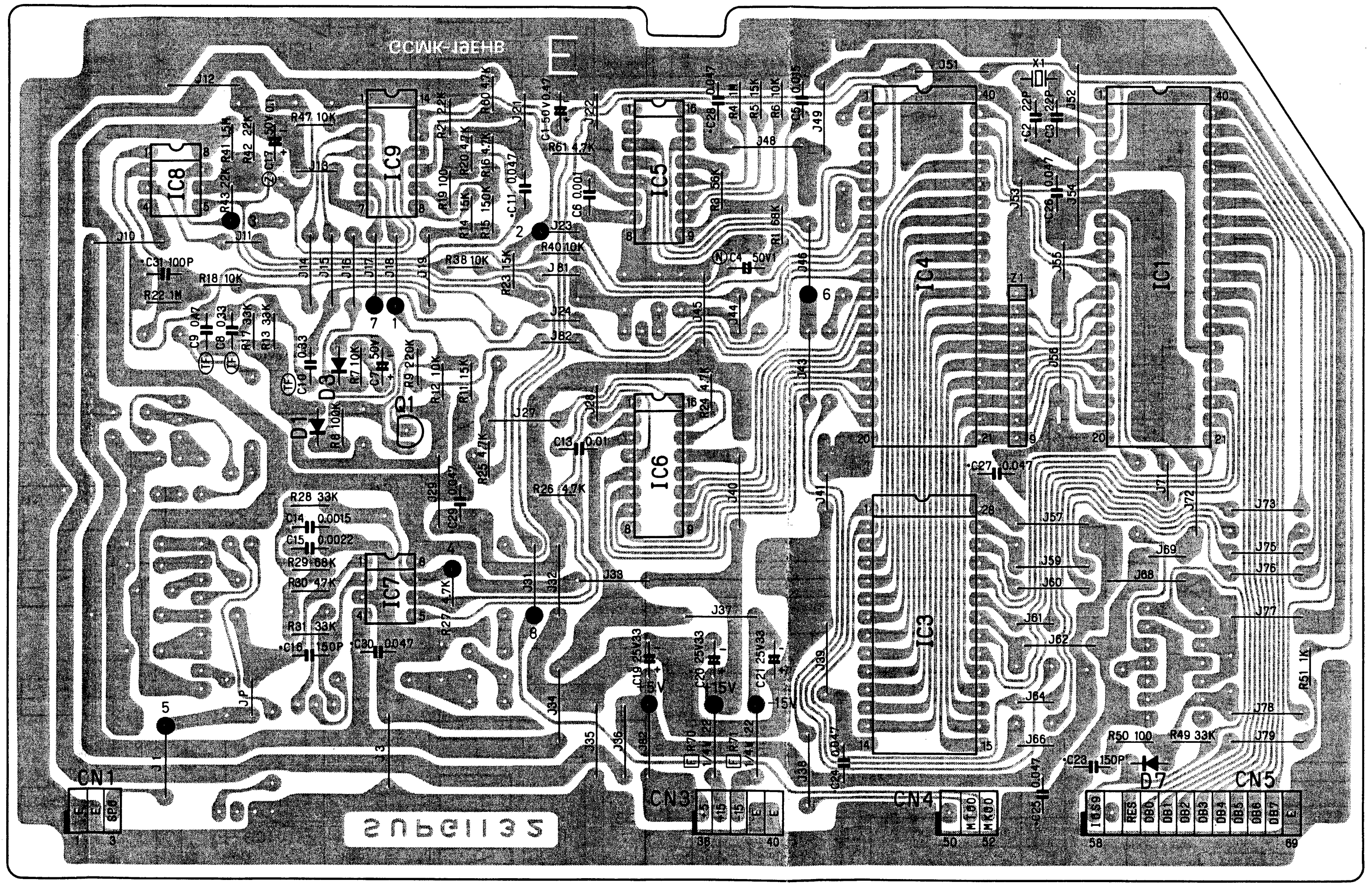


- Solo Presets........................Trumpet
- Upper Key............................C4

❹ Clarinet



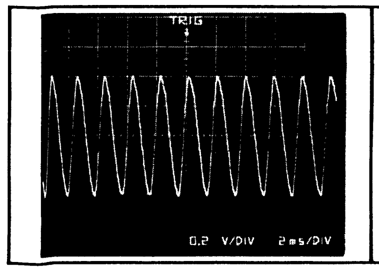
- Solo Presets........................Clarinet
- Upper Key............................C4



SXPG1132111

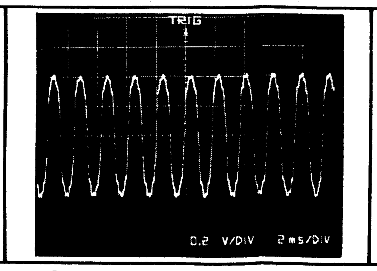
NOTES:
- IC'S
  - IC1: SVIGM8049569
  - IC3: SVIG02EX50-C
  - IC4: SVIG65002019
  - IC5: SVIGHD14046B
  - IC6: SVIGUPC624C
  - IC7: AN6552F
  - IC8: SVIGNJM082D
  - IC9: SVIGUPD4066B
- TRANSISTOR
  - Q1: 2SC2320LFG
- DIODES
  - D1, 3, 7: MA165TA5

❺ Flute



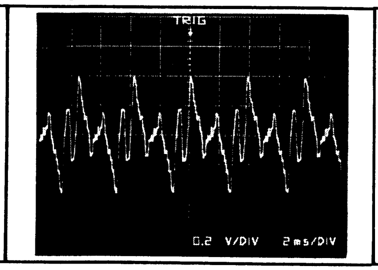
- Solo Presets........................Flute
- Upper Key............................C4

❺ Pan Flute



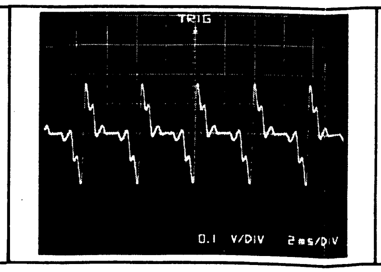
- Solo Presets........................Pan Flute
- Upper Key............................C4

❺ Synthe Ⅰ



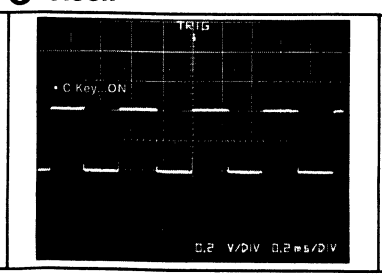
- Solo Presets........................Synthe Ⅰ
- Upper Key............................C4

❺ Synthe Ⅱ



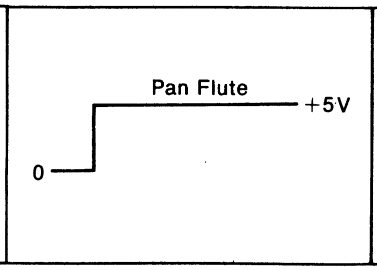
- Solo Presets........................Synthe Ⅱ
- Upper Key............................C4

❻ Clock



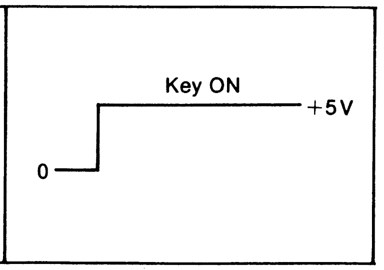
- C Key (2.1 KHz)~B Key (3.97 kHz)

❼



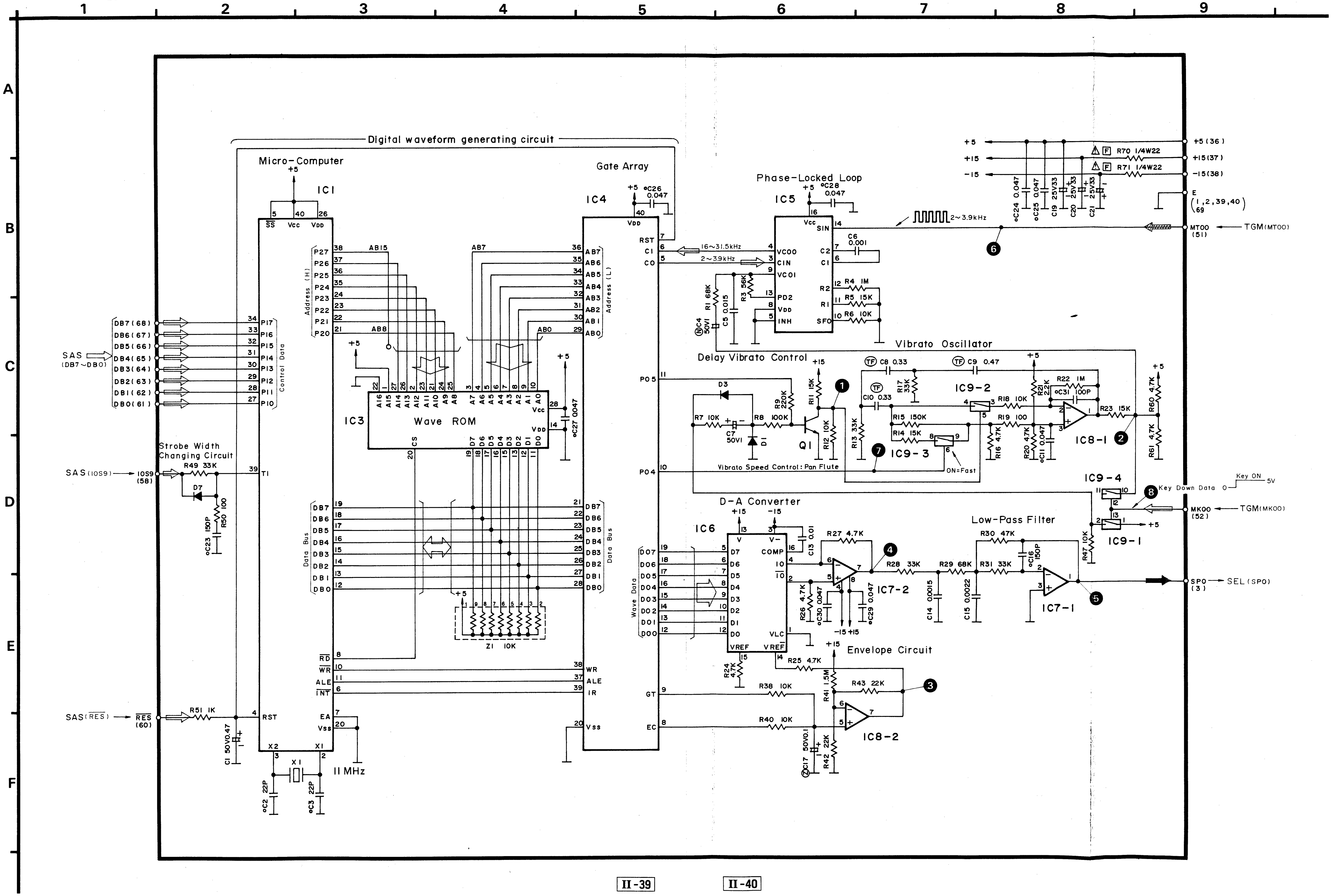
- Solo Presets........................Pan Flute

❽



- Solo Presets........................ON
- Upper Key............................ON

SPS SOLO PRESETS CIRCUIT DIAGRAM

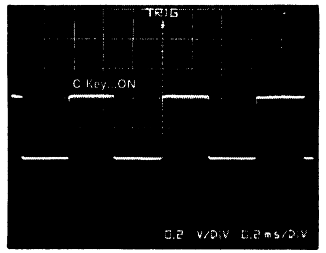

1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Digital waveform generating circuit
Micro-Computer
IC1
Gate Array
IC4
Phase-Locked Loop
IC5
IC3
Wave ROM
Strobe Width Changing Circuit
SAS (DB7~DB0)
SAS (IOS9) → IOS9 (58)
SAS (RES) → RES (60)
11 MHz
X1
Z1 10K
Address (H)
Address (L)
Control Data
Data Bus
Wave Data
Delay Vibrato Control
Vibrato Oscillator
Vibrato Speed Control: Pan Flute
ON=Fast
IC9-2
IC9-3
IC8-1
IC9-4
IC9-1
Key Down Data
Key ON 5V
D-A Converter
IC6
IC7-2
Low-Pass Filter
IC7-1
Envelope Circuit
IC8-2
Q1
2~3.9kHz
16~31.5kHz
+5 (36)
+15 (37)
-15 (38)
R70 1/4W22
R71 1/4W22
E (1,2,39,40) (69)
MT00 (51) ← TGM (MT00)
MK00 (52) ← TGM (MK00)
SP0 (3) → SEL (SP0)

BAS

BASS CIRCUIT BOARD

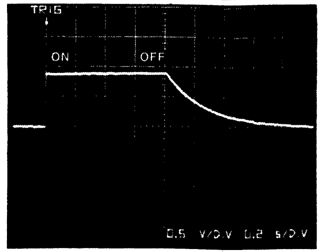
1 2 3 4 5 6 7 8 9

❶ Bass Clock



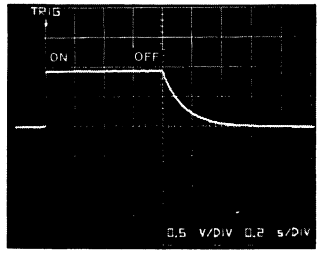
- C Key (1.57 KHz)~B Key (2.96 KHz)

❷, ❸ Envelope Control



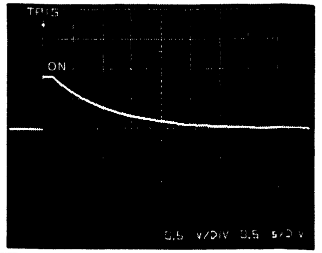
- Bass 16′, 8′, 16′+8′, Synthe Bass
- Sustain ....step 3
- Pedal Key ....ON-OFF

❷, ❸ Envelope Control



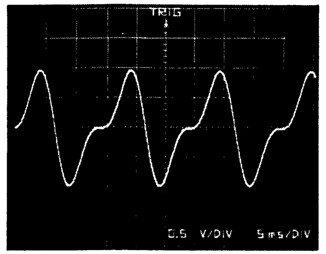
- Tuba
- Sustain ....step 3
- Pedal Key ....ON-OFF

❷, ❸ Envelope Control



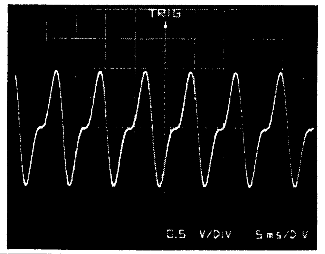
- Electric Bass, Acoustic Bass
- Sustain ....step 3
- Pedal Key ....ON

❹ Bass 16′



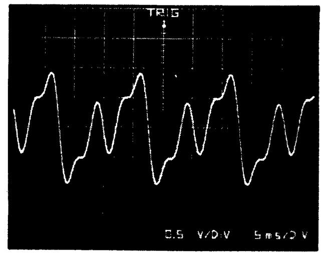
- Bass 16′
- Pedal Key C2

❹ Bass 8′



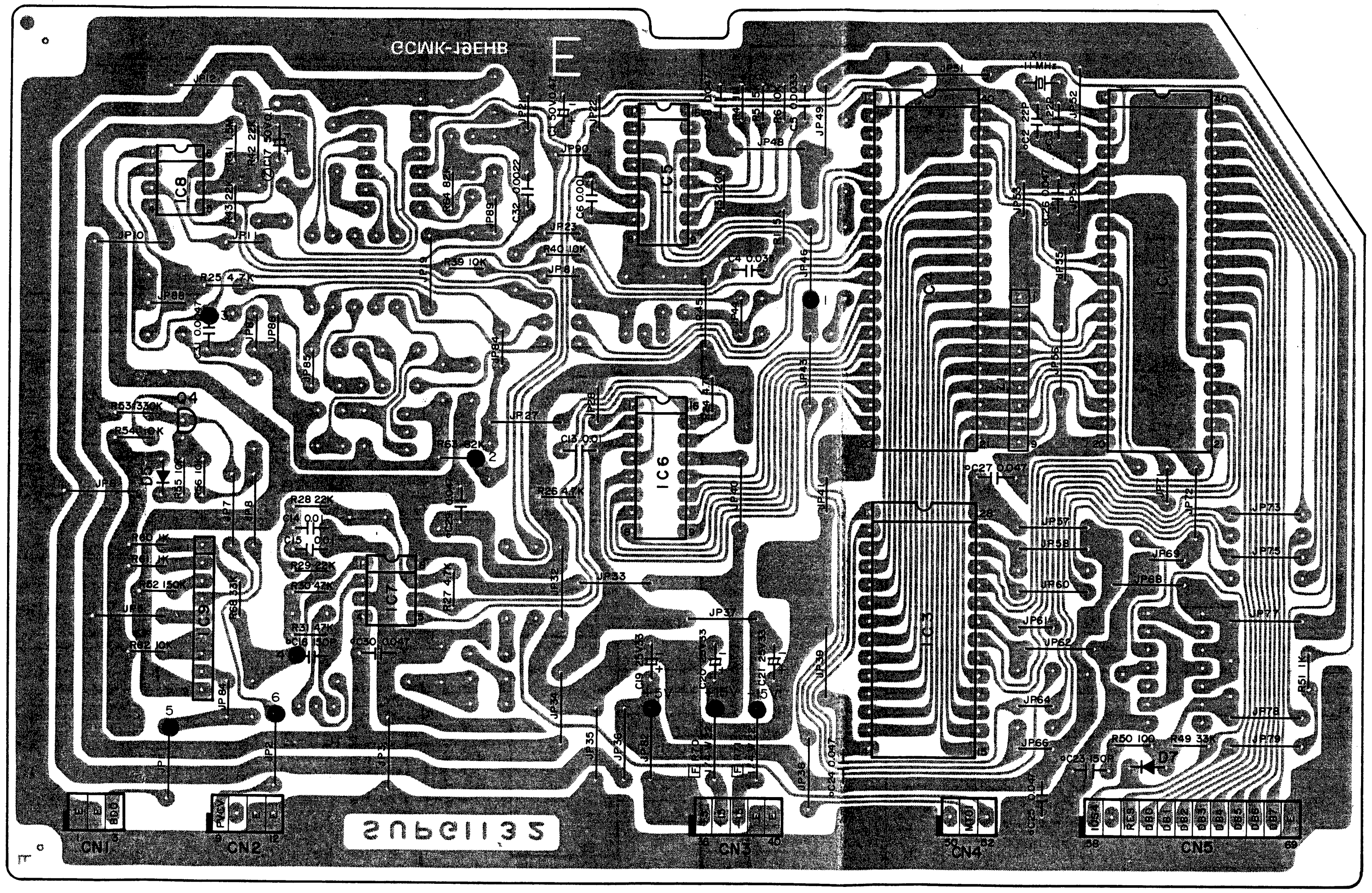
- Bass 8′
- Pedal Key C2

❹ Bass 16′+8′



- Bass 16′+8′
- Pedal Key C2

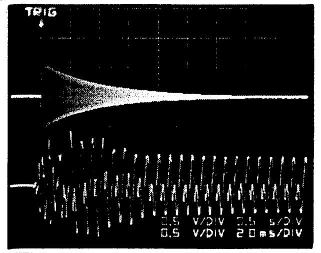
A B C D E F



SXPG1132121

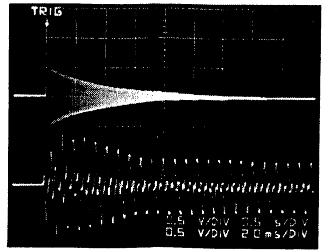
NOTES:
- IC'S
  - IC1: SVIGM8049569
  - IC3: SVIG2364096
  - IC4: SVIG65002019
  - IC5: SVIGHD14046B
  - IC6: SVIGUPC624C
  - IC7: AN6552F
  - IC8: SVIGNJM082D
  - IC9: SVIGBA6110
- TRANSISTOR
  - Q4: 2SA933STRS
- DIODES
  - D5, 7: MA165TA5

❹ Acoustic Bass



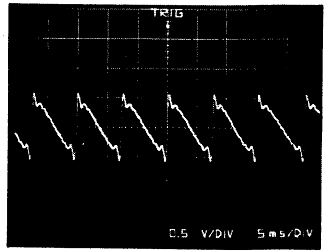
- Acoustic Bass
- Pedal Key C2

❹ Electric Bass



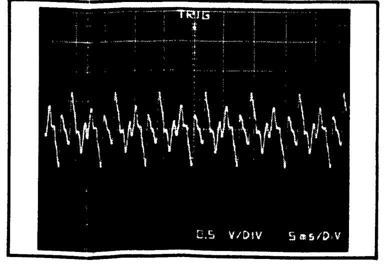
- Electric Bass
- Pedal Key C2

❹ Synthe Bass



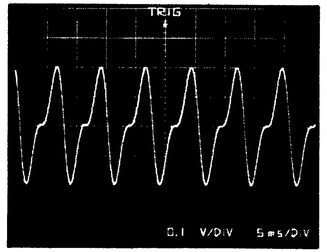
- Synthe Bass
- Pedal Key C2

❹ Tuba



- Tuba
- Pedal Key C2

❺ Bass 8′



- EXP, M. Volume..................Max.
- Bass Volume.......................Max.
- Bass 8′ • Pedal Key ... C2

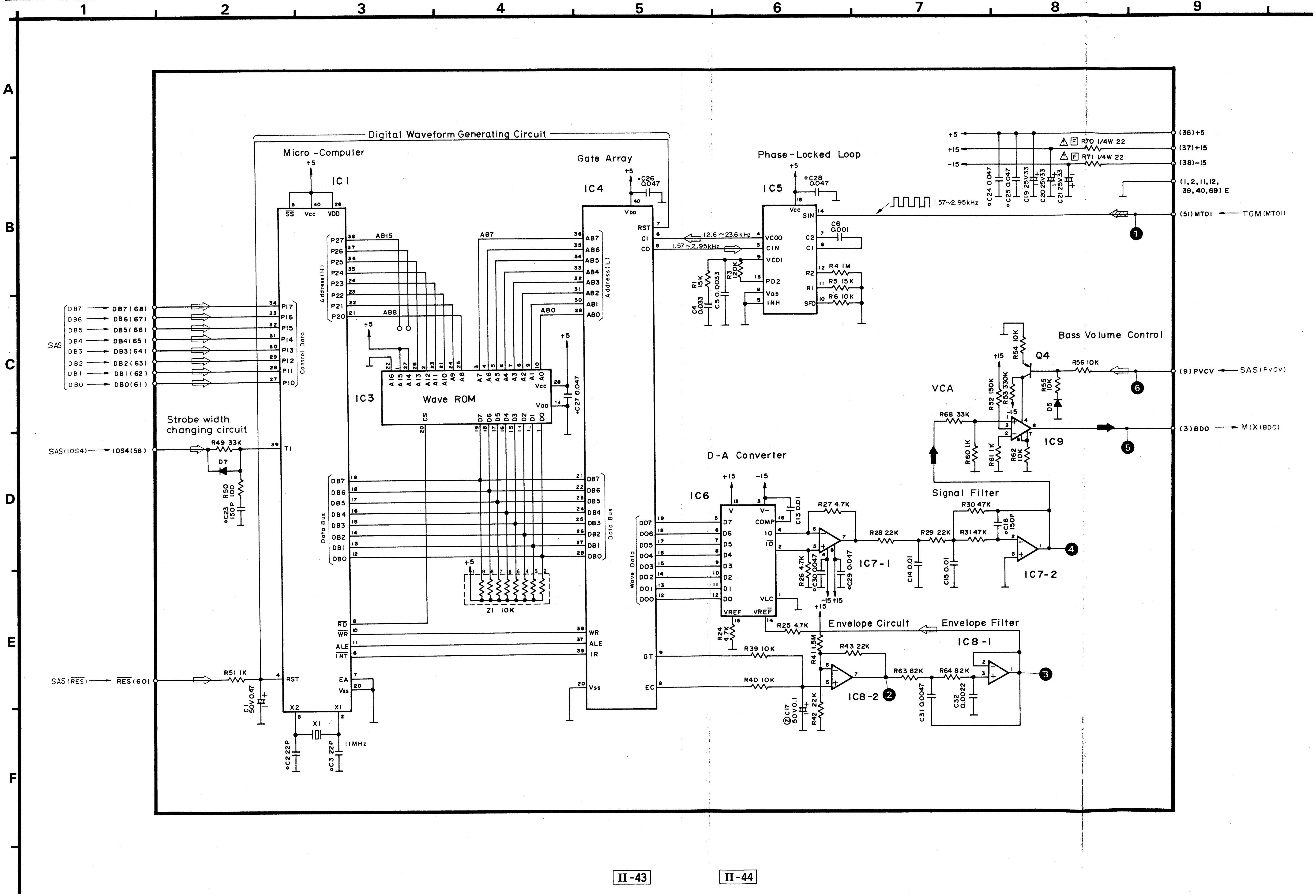
❻ Bass Volume Control

Bass Volume	Bass 8′ Bass 16′+8′ Synthe Bass Electric Bass Tuba	Bass 16′ Acoustic Bass
step 1	−1.8V	−2.5V
step 2	−3.2V	−4.7V
step 3	−4.5V	−6.6V
step 4	−7.5V	−11.0V

- EXP, M. Volume..................Max.
- Bass Volume.......................step 1~4
- Pedal Key ....ON

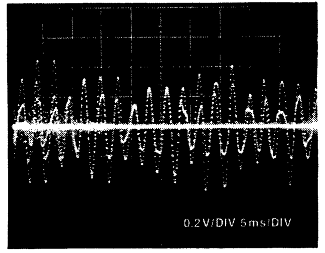
BAS

BASS CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Digital Waveform Generating Circuit
Micro-Computer
IC1
Gate Array
IC4
Phase-Locked Loop
IC5
IC3
Wave ROM
Strobe width changing circuit
D-A Converter
IC6
IC7-1
IC7-2
Signal Filter
Envelope Circuit
Envelope Filter
IC8-1
IC8-2
Bass Volume Control
Q4
VCA
IC9
Address (H)
Address (L)
Control Data
Data Bus
Wave Data
SAS
DB7 → DB7(68)
DB6 → DB6(67)
DB5 → DB5(66)
DB4 → DB4(65)
DB3 → DB3(64)
DB2 → DB2(63)
DB1 → DB1(62)
DB0 → DB0(61)
SAS(IOS4) → IOS4(58)
SAS(RES) → RES(60)
R49 33K
D7
R50 100
C23 150P
R51 1K
C1 50V0.47
X1
11MHz
C2 22P
C3 22P
Z1 10K
C26 0.047
C27 0.047
C28 0.047
C6 0.001
12.6~23.6kHz
1.57~2.95kHz
R1 15K
R3 120K
C4 0.033
C5 0.0033
R4 1M
R5 15K
R6 10K
(36)+5
(37)+15
(38)-15
(1,2,11,12, 39,40,69) E
(51)MT01 ← TGM(MT01)
(9)PVCV ← SAS(PVCV)
(3)BDO → MIX(BDO)
R70 1/4W 22
R71 1/4W 22
C24 0.047
C25 0.047
C19 25V33
C20 25V33
C21 25V33
R54 10K
R56 10K
R55 10K
D5
R52 150K
R53 330K
R68 33K
R60 1K
R61 1K
R62 10K
C13 0.01
R27 4.7K
R26 4.7K
C30 0.047
C29 0.047
R28 22K
R29 22K
R30 47K
R31 47K
C16 150P
C14 0.01
C15 0.01
R25 4.7K
R24 4.7K
R39 10K
R40 10K
R41 1.5M
R42 22K
C17 50V0.1
R43 22K
R63 82K
R64 82K
C31 0.0047
C32 0.0022
1
2
3
4
5
6

DP DRUM PERCUSSION CIRCUIT BOARD

❶

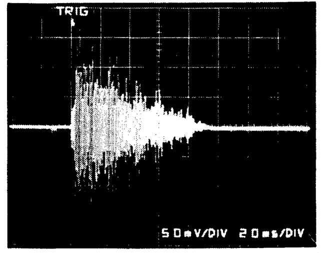


- Rhythm ....Rumba
- Tempo .... ♩=120

❷

- Symbal
- Snare drum
- Shaker
- Tambourine
- Agogo bell
- Cowbell

• Tambourine

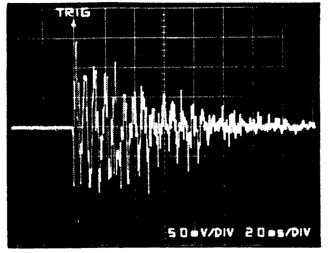


- Record ....ON • R. Composer I ....ON
- Tambourine...........ON • Lower Key ....ON

❸

- Closed hi-hat
- Open hi-hat
- Snare drum
- Agogo bell
- Cowbell

• Snare Drum

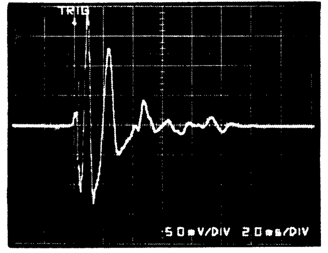


- Record ....ON • R. Composer I ....ON
- Snare Drum...........ON • Lower Key ....ON

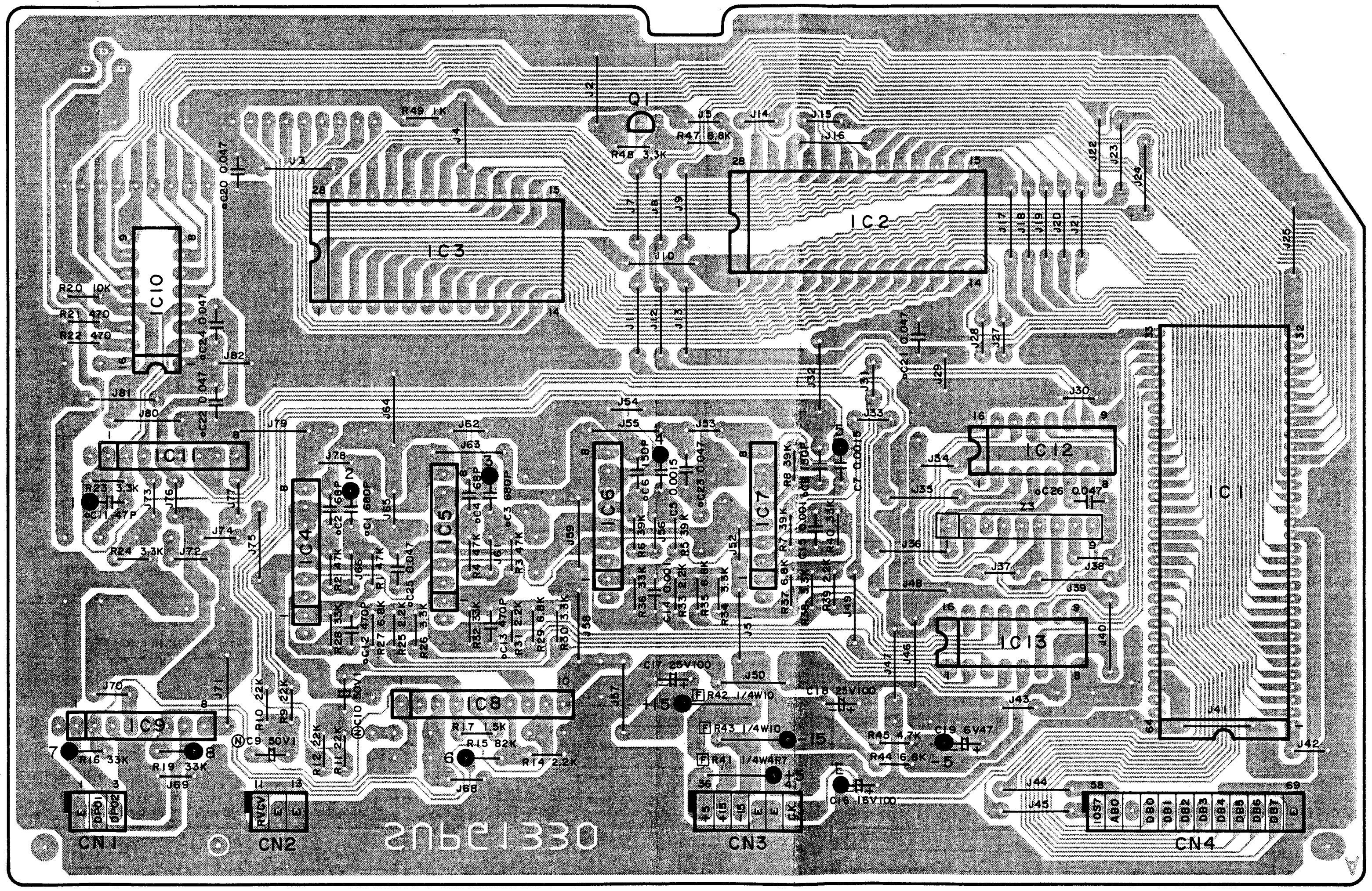
❹

- Tom-tom
- Rim shot
- Bass drum
- Hand clap
- Conga

• Bass Drum



- Record ....ON • R. Composer I ....ON
- Bass Drum ....ON • Lower Key ....ON


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Q1
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
CN1
CN2
CN3
CN4
R49 1K
R47 6.8K
R48 3.3K
R20 10K
R21 470
R22 470
R23 3.3K
R24 3.3K
R16 33K
R19 33K
R17 1.5K
R15 82K
R14 2.2K
R42 1/4W10
R43 1/4W10
R41 1/4W4R7
R45 4.7K
R44 6.8K
C17 25V100
C18 25V100
C19 6V47
C16 15V100
C9 50V1
C10 50V1
1
2
3
4
5
6
7
8
SUPG1330

SXPG133011

NOTES:

• IC'S

IC1:	MN50015PGQ
IC2:	SVIG1000C061
IC3:	SVIG1000C062
IC4~7, 9:	SVIGM5218L
IC8:	SVIGM5241L
IC10:	SVIGHA17008P
IC11:	SVIGM5238L
IC12, 13:	SVIGHD14051B

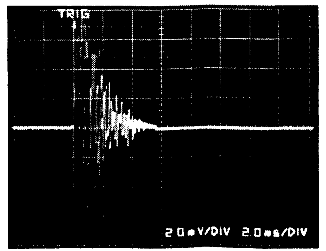
• TRANSISTOR

Q1:	2SC1047C

❺

- Tom-tom
- Rim shot
- Bass drum
- Hand clap
- Bongo

• Bongo



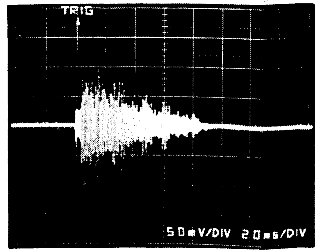
- Record ....ON • R. Composer I ....ON
- Bongo ....ON • Lower Key ....ON

❻

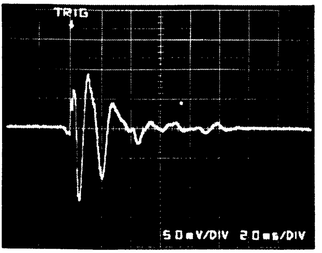
• Rhythm Volume Control	
step 1	−4.2V
step 2	−3.6V
step 3	−3.0V
step 4	−2.5V

- Expression ....Max.
- Main Volume.......................step 1
- Rhythm Volume..................step 1~4

❼ Tambourine

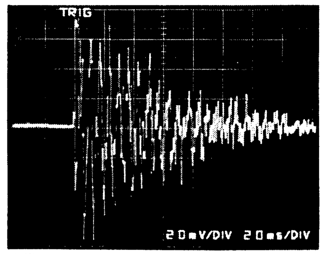


• Bass Drum

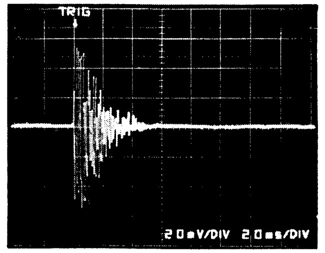


- Expression ....Max.
- Main Volume.......................step 4
- Rhythm Volume..................step 4

❽ Snare Drum

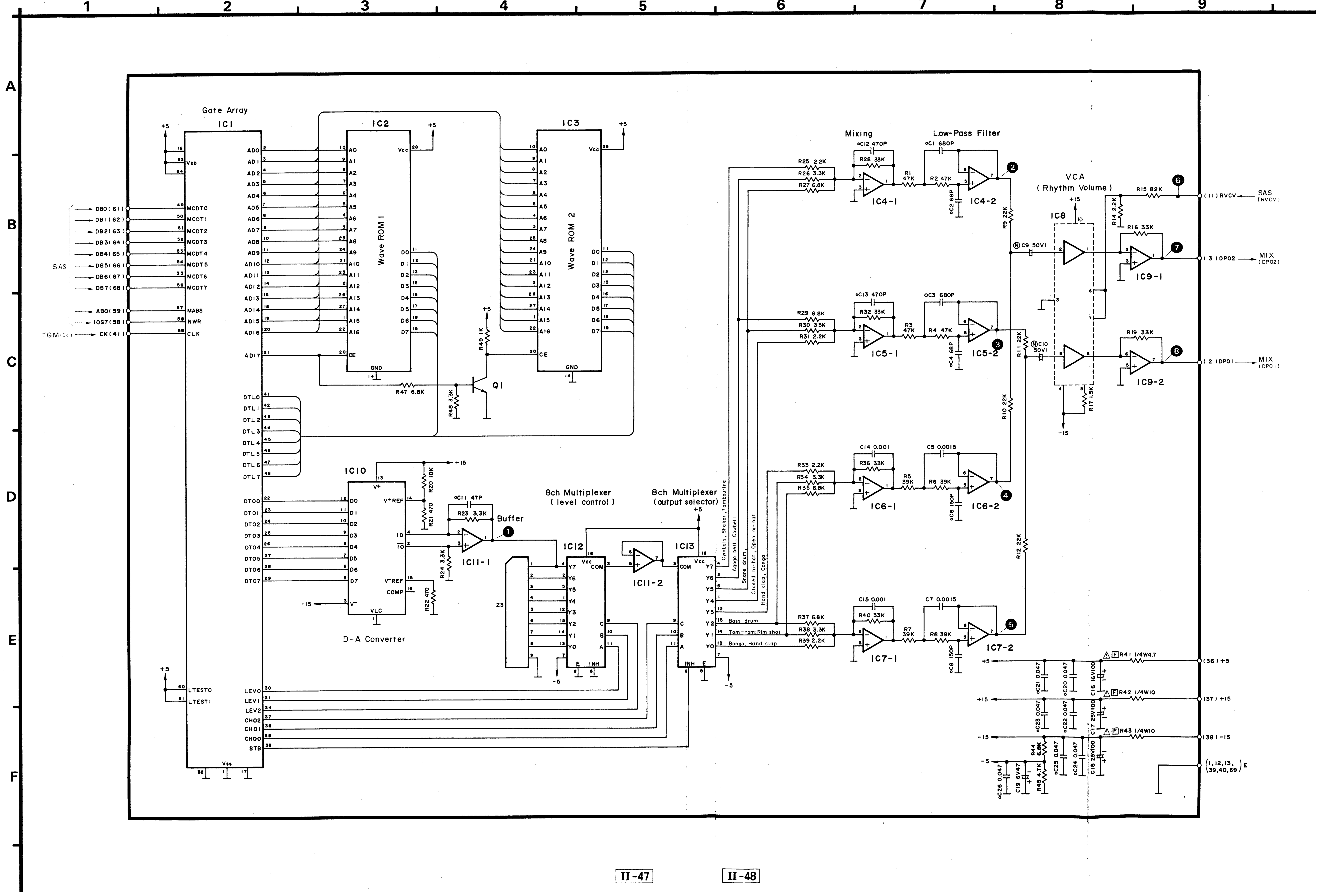


• Bongo



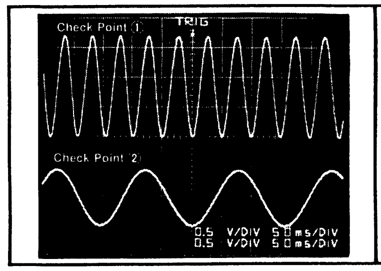
- Expression ....Max.
- Main Volume.......................step 4
- Rhythm Volume..................step 4

DP DRUM PERCUSSION CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Gate Array
IC1
IC2
IC3
Wave ROM 1
Wave ROM 2
Q1
R47 6.8K
R48 3.3K
R49 1K
SAS
TGM(CK)
DB0(61)
DB1(62)
DB2(63)
DB3(64)
DB4(65)
DB5(66)
DB6(67)
DB7(68)
AB0(59)
IOS7(58)
CK(41)
MCDT0
MCDT1
MCDT2
MCDT3
MCDT4
MCDT5
MCDT6
MCDT7
MABS
NWR
CLK
LTEST0
LTEST1
LEV0
LEV1
LEV2
CHO2
CHO1
CHO0
STB
DTL0
DTL7
DTO0
DTO7
IC10
D-A Converter
R20 10K
R21 470
R22 470
R23 3.3K
R24 3.3K
C11 47P
Buffer
IC11-1
IC11-2
8ch Multiplexer (level control)
8ch Multiplexer (output selector)
IC12
IC13
Z3
Cymbals, Shaker, Tambourine
Agogo bell, Cowbell
Snare drum
Closed hi-hat, Open hi-hat
Hand clap, Conga
Bass drum
Tom-tom, Rim shot
Bongo, Hand clap
Mixing
Low-Pass Filter
C12 470P
R28 33K
C1 680P
R25 2.2K
R26 3.3K
R27 6.8K
R1 47K
R2 47K
C2 68P
IC4-1
IC4-2
C13 470P
R32 33K
C3 680P
R29 6.8K
R30 3.3K
R31 2.2K
R3 47K
R4 47K
C4 68P
IC5-1
IC5-2
C14 0.001
R36 33K
C5 0.0015
R33 2.2K
R34 3.3K
R35 6.8K
R5 39K
R6 39K
C6 150P
IC6-1
IC6-2
C15 0.001
R40 33K
C7 0.0015
R37 6.8K
R38 3.3K
R39 2.2K
R7 39K
R8 39K
C8 150P
IC7-1
IC7-2
VCA (Rhythm Volume)
IC8
R9 22K
R10 22K
R11 22K
R12 22K
C9 50V1
C10 50V1
R14 2.2K
R15 82K
R16 33K
R17 1.5K
R19 33K
IC9-1
IC9-2
(11) RVCV
SAS (RVCV)
(3) DPO2
MIX (DPO2)
(2) DPO1
MIX (DPO1)
R41 1/4W4.7
R42 1/4W10
R43 1/4W10
R44 6.8K
R45 4.7K
C16 16V100
C17 25V100
C18 25V100
C19 6V47
C20 0.047
C21 0.047
C22 0.047
C23 0.047
C24 0.047
C25 0.047
C26 0.047
(36) +5
(37) +15
(38) -15
(1,12,13, 39,40,69) E
+5
+15
-15
-5

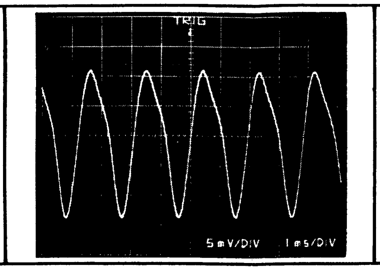
LCM TREMOLO & CELESTE MODULATION CIRCUIT BOARD

❶ LMF, ❷ LMS



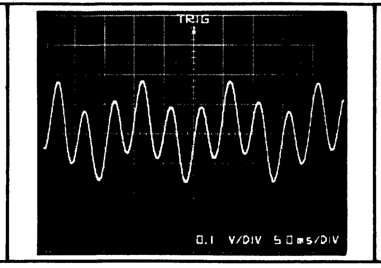
- Multi-Tremolo......................Fast

❸



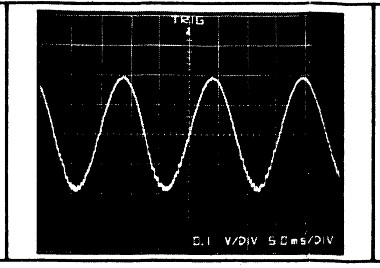
- Upper Tab Voices..............Flute 8′
- Upper Tab Volume............Max.
- Tremolo... Fast • Upper Key... C4

❹



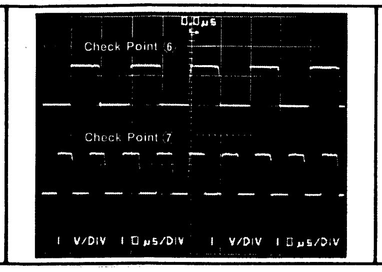
- Multi-Tremolo......................Fast

❺



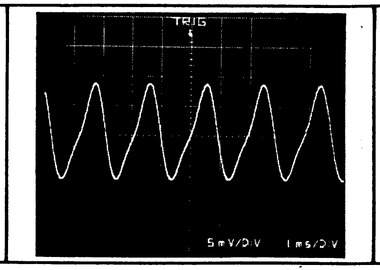
- Multi-Tremolo......................Fast

❻, ❼



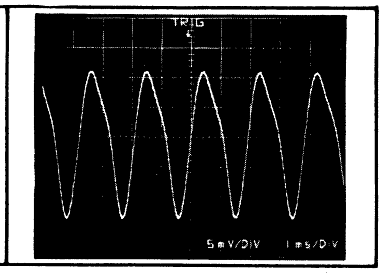
- Multi-Tremolo......................Fast

❽



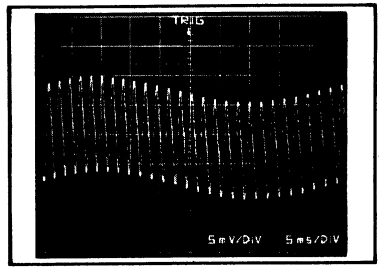
- Upper Tab Voices..............Flute 8′
- Upper Tab Volume............Max.
- Tremolo... Fast • Upper Key... C4

❾



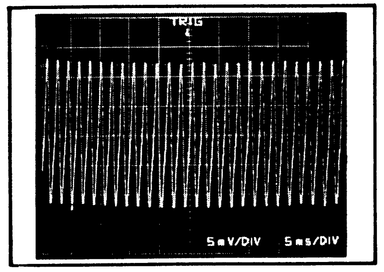
- Upper Tab Voices..............Flute 8′
- Upper Tab Volume............Max.
- Tremolo... Fast • Upper Key... C4

❿



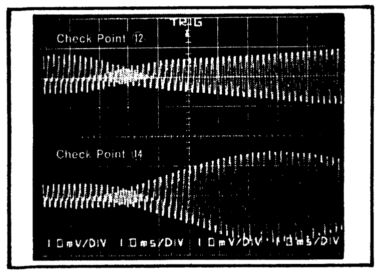
- Upper Tab Voices..............Flute 8′
- Upper Tab Volume............Max.
- Tremolo... Fast • Upper Key... C4

⓫

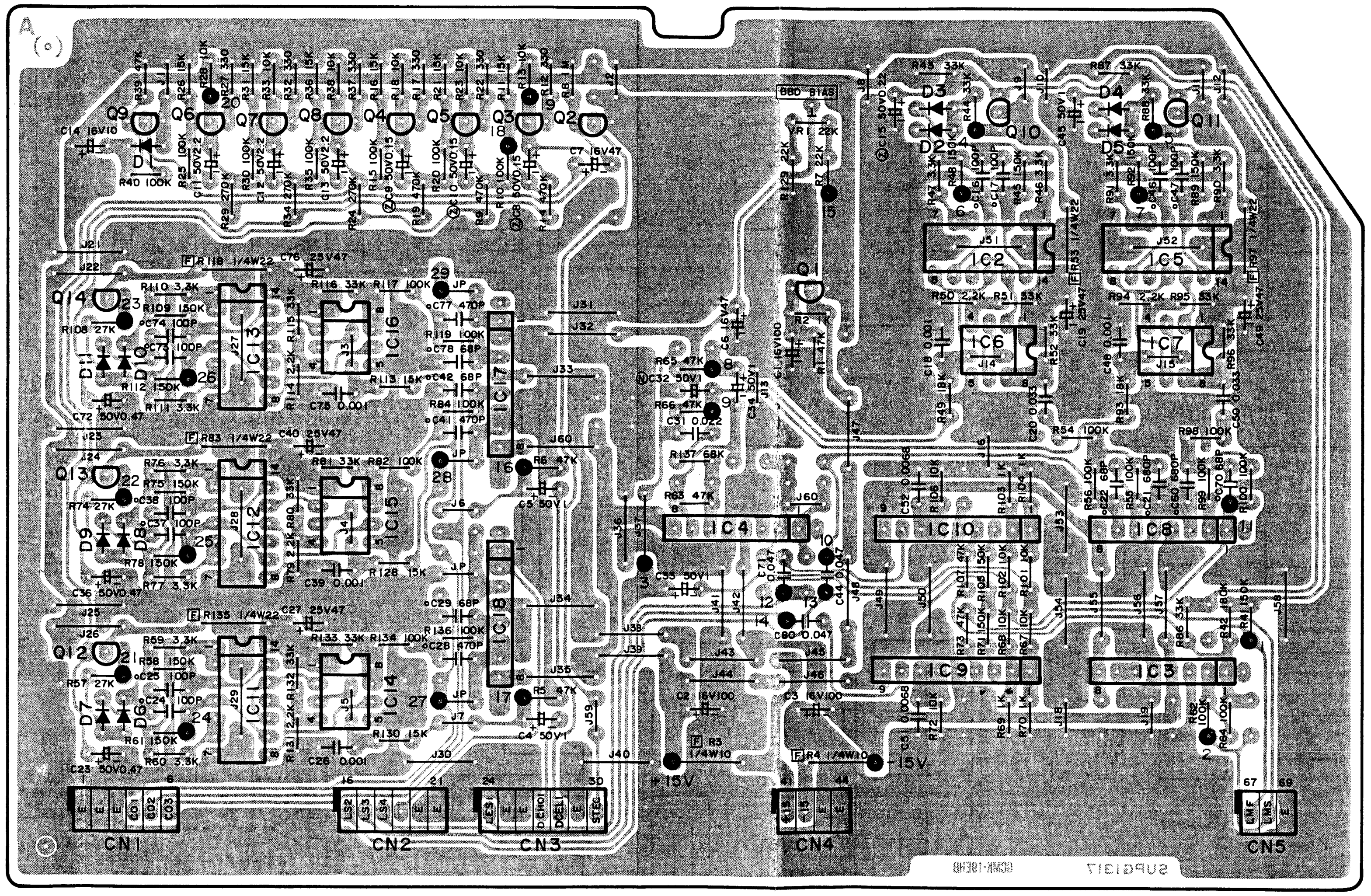


- Upper Tab Voices..............Flute 8′
- Upper Tab Volume............Max.
- Tremolo... Fast • Upper Key... C4

⓬, ⓮



- Upper Tab Voices..............Flute 8′
- Upper Tab Volume............Max.
- Tremolo... Fast • Upper Key... C4



SXPG131721

NOTES:

- IC'S

IC2, 5, 11~13:	SVIGMSM4011
IC3, 4, 8, 17, 18:	SVIGM5218L
IC6, 7:	MN3006
IC9, 10:	SVIGBA6110
IC14~16:	MN3009

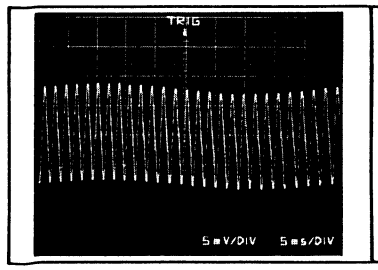
- TRANSISTORS

Q1, 3~14:	2SC2320LFG
Q2:	2SJ40CD

- DIODES

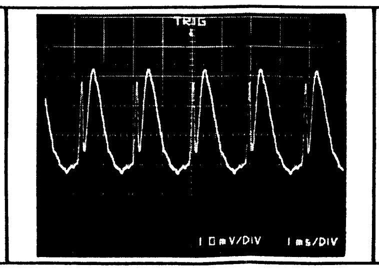
D1~11:	MA165TA5

⓭



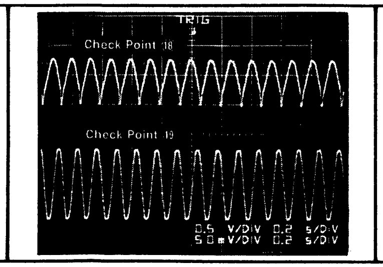
- Upper Tab Voices..............Flute 8′
- Upper Tab Volume............Max.
- Tremolo... Fast • Upper Key... C4

⓰, ⓱



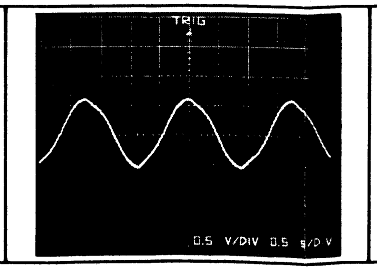
- U. String Ensemble............ON
- Volume...............................Max.
- Upper Key..........................C4

⓲, ⓳

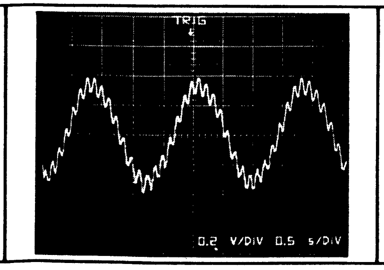


- U. String Ensemble............ON
- Upper Key...........................ON

⓴

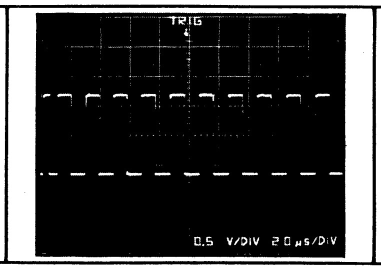


㉑, ㉒, ㉓



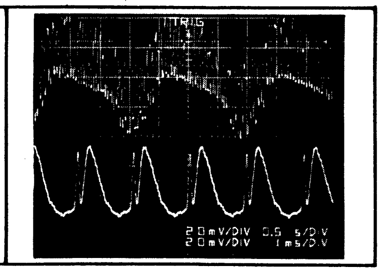
- U. String Ensemble............ON
- Upper Key...........................ON

㉔, ㉕, ㉖



- U. String Ensemble............ON
- Upper Key...........................ON

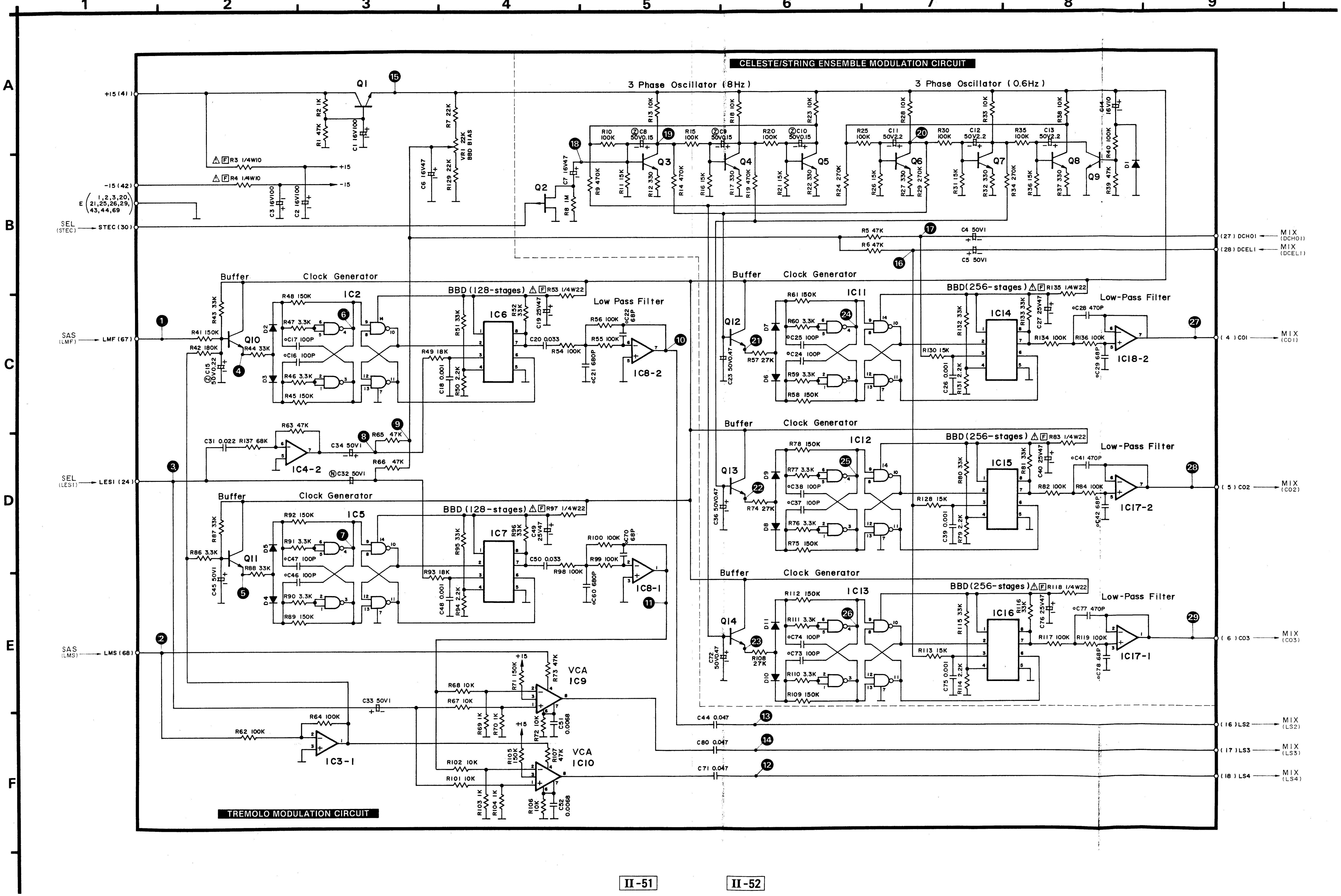
㉗, ㉘, ㉙



- U. String Ensemble............ON
- Volume...............................Max.
- Upper Key..........................C4

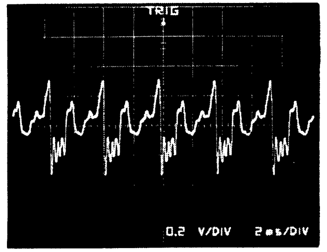
LCM

TREMOLO & CELESTE MODULATION CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
CELESTE/STRING ENSEMBLE MODULATION CIRCUIT
TREMOLO MODULATION CIRCUIT
3 Phase Oscillator (8Hz)
3 Phase Oscillator (0.6Hz)
Buffer
Clock Generator
BBD (128-stages)
BBD (256-stages)
Low Pass Filter
Low-Pass Filter
VCA IC9
VCA IC10
IC2
IC5
IC6
IC7
IC8-2
IC8-1
IC4-2
IC3-1
IC11
IC12
IC13
IC14
IC15
IC16
IC18-2
IC17-2
IC17-1
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
+15 (41)
-15 (42)
E (1,2,3,20, 21,25,26,29, 43,44,69)
SEL (STEC) → STEC (30)
SAS (LMF) → LMF (67)
SEL (LES1) → LES1 (24)
SAS (LMS) → LMS (68)
(27) DCHO1 → MIX (DCHO1)
(28) DCEL1 → MIX (DCEL1)
(4) CO1 → MIX (CO1)
(5) CO2 → MIX (CO2)
(6) CO3 → MIX (CO3)
(16) LS2 → MIX (LS2)
(17) LS3 → MIX (LS3)
(18) LS4 → MIX (LS4)
VR1 22K BBD BIAS
R3 1/4W10
R4 1/4W10
R53 1/4W22
R97 1/4W22
R135 1/4W22
R83 1/4W22
R118 1/4W22
C44 0.047
C80 0.047
C71 0.047
C33 50V1
R62 100K
R64 100K

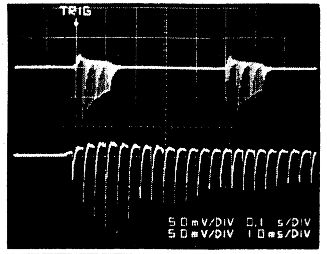
SEL SELECTOR CIRCUIT BOARD

❶ Solo Presets



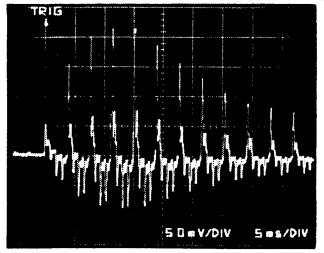
- U. Solo Presets..................Saxophone
- Upper Key.............................C4

❷ Rhythmic Orchestra



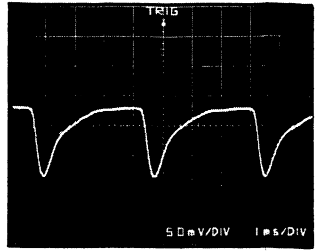
- Rhythm ....Bossa nova I
- Rhythmic ....Pattern I
- Lower Key C3

❸ Melodic Orchestra



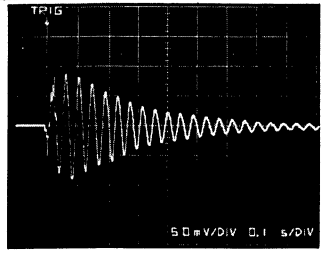
- Rhythm ....Disco I
- Melodic...............................Pattern I
- Lower Key C3

❹ Orchestral Presets



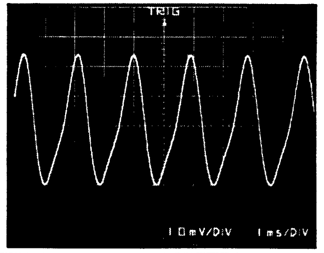
- U. Orchestral Presets ....Trombone
- Upper Key.............................C4

❺ Percussive Presets



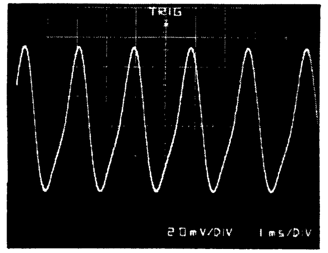
- U. Percussive Presets........Piano
- Upper Key.............................C4
- Sustain ....Short

❻ Lower Tab Voices



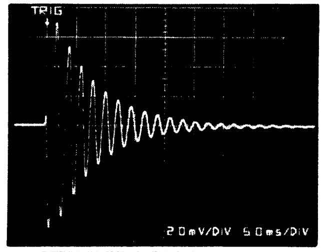
- Lower Tab Voices ....Flute 8′
- Lower Key C4

❼ Upper Tab Voices

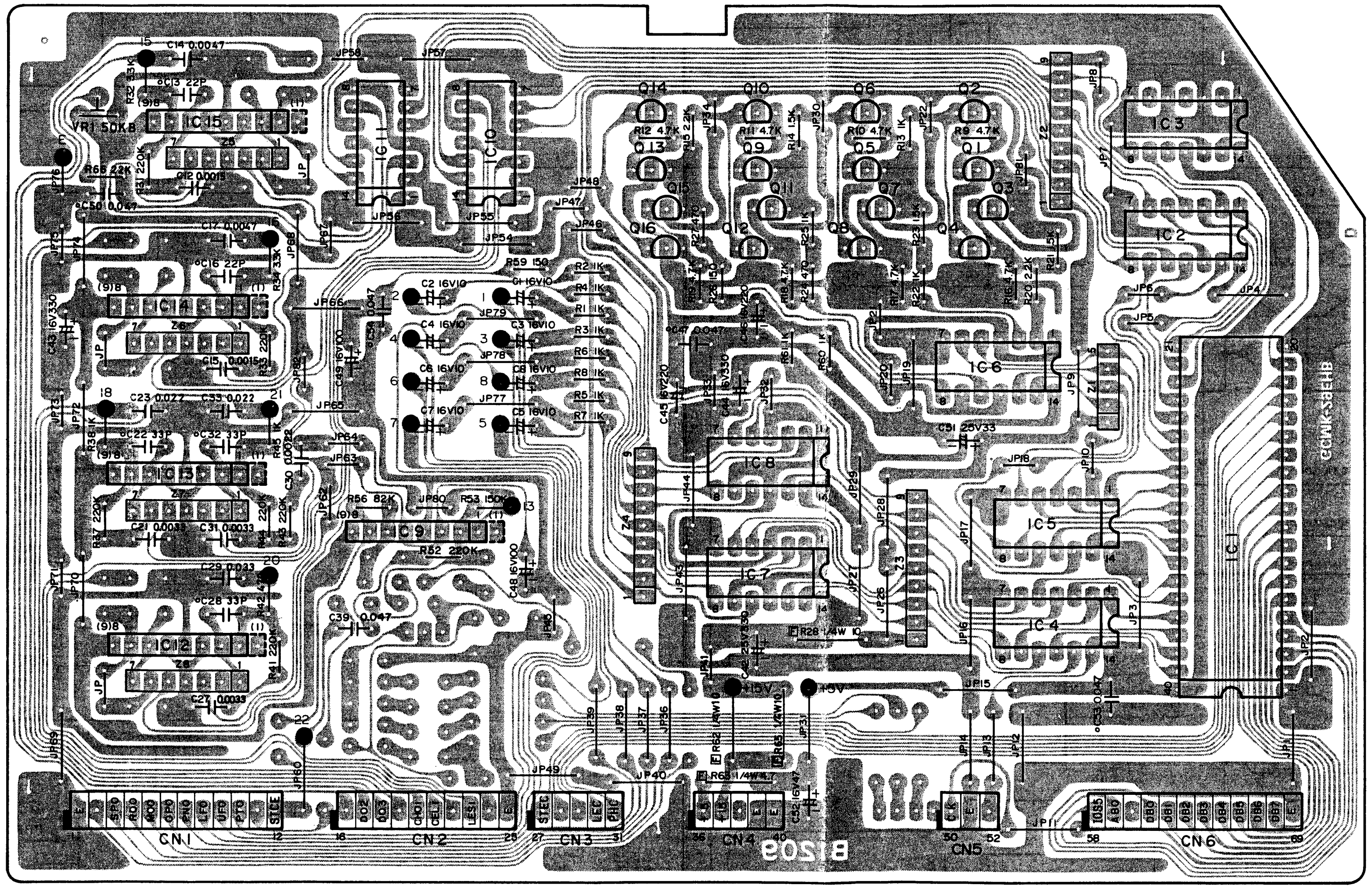


- Upper Tab Voices...............Flute 8′
- Upper Key.............................C4

❽ Percussive Tone



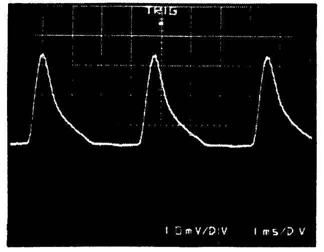
- Percussive Tone.................4′
- Upper Key.............................C4
- Envelope..............................Short



SXPG120941B

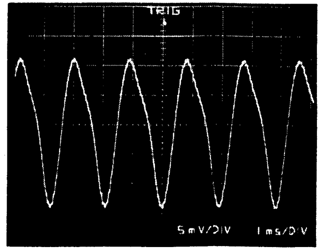
NOTES:
- IC'S
  - IC1: SVIG65002018
  - IC2~5: SVIGM53217
  - IC6~8, 10, 11: SVIGUPD4066B
  - IC9, 12~15: SVIGM5218L
- TRANSISTORS
  - Q1, 4, 5, 8, 9, 12, 13, 16: 2SA1015GR
  - Q2, 3, 6, 7, 10, 11, 14, 15: 2SC1815GR

⑮ Direct 2



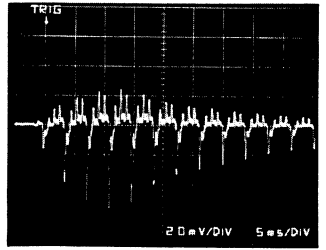
- U. Orchestral Presets ....Trombone
- Volume................................Max.
- Upper Key.............................C4

⑯ Direct 3



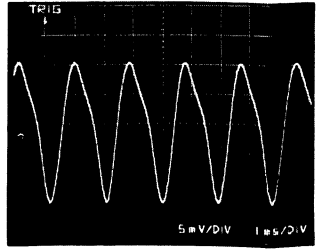
- Upper Tab Voices...............Flute 8′
- Volume................................Max.
- Upper Key.............................C4

⑱ Accompaniment



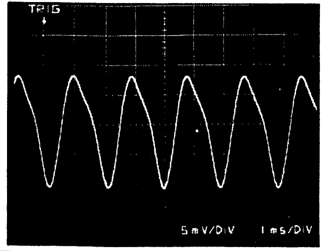
- Rhythm ....Disco I
- Melodic...............................Pattern I
- Lower Key C3
- Accomp Volume.................Max.

⑳ Tremolo



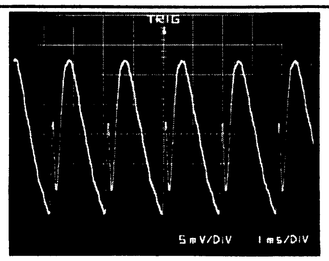
- Upper Tab Voices...............Flute 8′
- Upper Tab Volume ....Max.
- Multi-Tremolo......................U. Tab Voices
- Upper Key.............................C4

㉑ Celeste



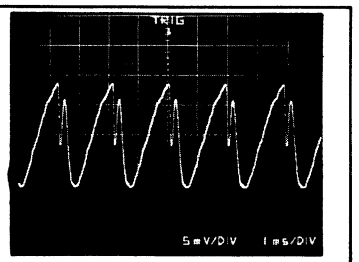
- Upper Tab Voices...............Flute 8′
- Upper Tab Volume ....Max.
- Celeste................................U. Tab Voices
- Upper Key.............................C4

㉒



- U. String Ensemble ....ON
- Volume................................Max
- Upper Key.............................C4

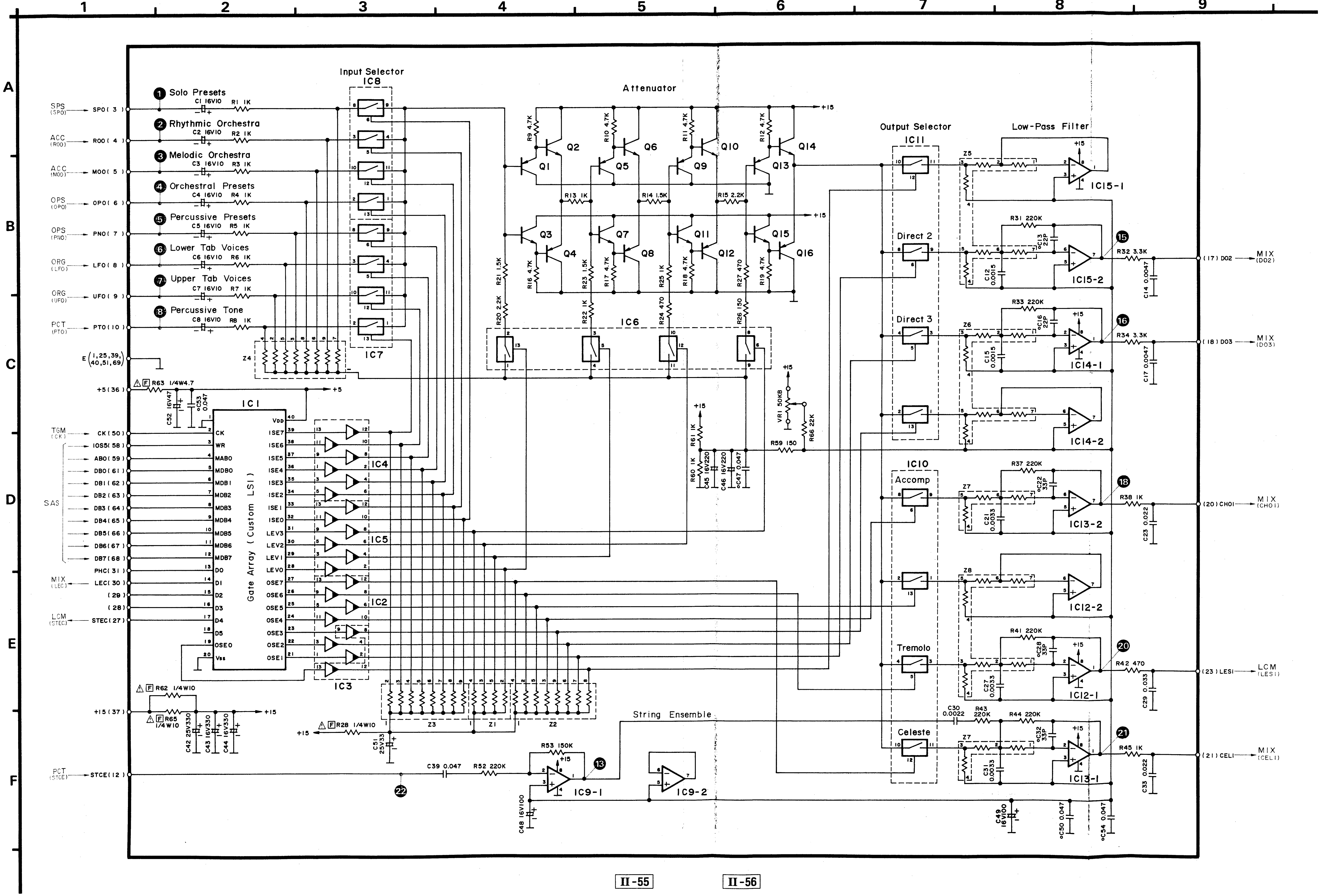
⑬



- U. String Ensemble ....ON
- Volume................................Max.
- Upper Key.............................C4

SEL

SELECTOR CIRCUIT DIAGRAM


1
2
3
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5
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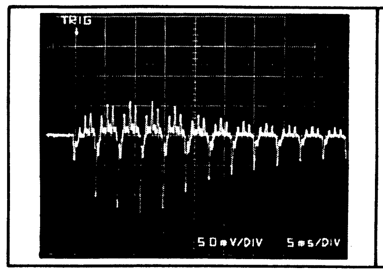
7
8
9
A
B
C
D
E
F
Input Selector
IC8
IC7
Attenuator
Output Selector
IC11
Low-Pass Filter
IC10
IC1
Gate Array (Custom LSI)
IC3
IC4
IC5
IC2
IC6
Z1
Z2
Z3
Z4
Z5
Z6
Z7
Z8
String Ensemble
❶ Solo Presets
❷ Rhythmic Orchestra
❸ Melodic Orchestra
❹ Orchestral Presets
❺ Percussive Presets
❻ Lower Tab Voices
❼ Upper Tab Voices
❽ Percussive Tone
SPS (SPO) SPO(3)
ACC (ROO) ROO(4)
ACC (MOO) MOO(5)
OPS (OPO) OPO(6)
OPS (PNO) PNO(7)
ORG (LFO) LFO(8)
ORG (UFO) UFO(9)
PCT (PTO) PTO(10)
E (1,25,39, 40,51,69)
+5(36)
TGM (CK) CK(50)
SAS
IOS5(58)
ABO(59)
DBO(61)
DB1(62)
DB2(63)
DB3(64)
DB4(65)
DB5(66)
DB6(67)
DB7(68)
PHC(31)
MIX (LEC) LEC(30)
(29)
(28)
LCM (STEC) STEC(27)
+15(37)
PCT (STCE) STCE(12)
C1 16V10 R1 1K
C2 16V10 R2 1K
C3 16V10 R3 1K
C4 16V10 R4 1K
C5 16V10 R5 1K
C6 16V10 R6 1K
C7 16V10 R7 1K
C8 16V10 R8 1K
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
R9 4.7K
R10 4.7K
R11 4.7K
R12 4.7K
R13 1K
R14 1.5K
R15 2.2K
R16 4.7K
R17 4.7K
R18 4.7K
R19 4.7K
R20 2.2K
R21 1.5K
R22 1K
R23 1.5K
R24 470
R25 1K
R26 150
R27 470
+15
R63 1/4W4.7
C52 16V47
C53 0.047
+5
CK
WR
MABO
MDBO
MDB1
MDB2
MDB3
MDB4
MDB5
MDB6
MDB7
DO
D1
D2
D3
D4
D5
OSEO
Vss
VDD
ISE7
ISE6
ISE5
ISE4
ISE3
ISE2
ISE1
ISEO
LEV3
LEV2
LEV1
LEVO
OSE7
OSE6
OSE5
OSE4
OSE3
OSE2
OSE1
VR1 50KB
R66 22K
R61 1K
R60 1K
R59 150
C45 16V220
C46 16V220
C47 0.047
Direct 2
Direct 3
Accomp
Tremolo
Celeste
IC15-1
IC15-2
IC14-1
IC14-2
IC13-2
IC12-2
IC12-1
IC13-1
R31 220K
C13 22P
C12 0.0015
R32 3.3K
C14 0.0047
R33 220K
C16 22P
C15 0.0015
R34 3.3K
C17 0.0047
R37 220K
C22 33P
C21 0.0033
R38 1K
C23 0.022
R41 220K
C28 33P
C27 0.0033
R42 470
C29 0.033
C30 0.0022
R43 220K
R44 220K
C32 33P
C31 0.0033
R45 1K
C33 0.022
⓯
⓰
⓲
⓴
㉑
⓭
㉒
(17) DO2 MIX (DO2)
(18) DO3 MIX (DO3)
(20) CHO1 MIX (CHO1)
(23) LES1 LCM (LES1)
(21) CEL1 MIX (CEL1)
R62 1/4W10
R65 1/4W10
C42 25V330
C43 16V330
C44 16V330
R28 1/4W10
C51 25V33
C39 0.047
R52 220K
R53 150K
IC9-1
IC9-2
C48 16V100
C49 16V100
C50 0.047
C54 0.047

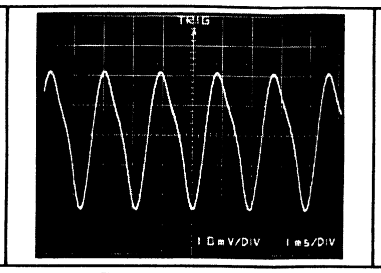
MIX MIXING CIRCUIT BOARD

❶



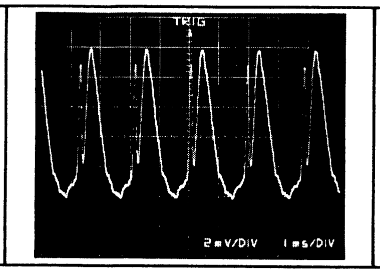
- Rhythm ....Disco I
- Accompaniment ....Melodic I
- Volume ... Max. • Lower Key ...C3

❸



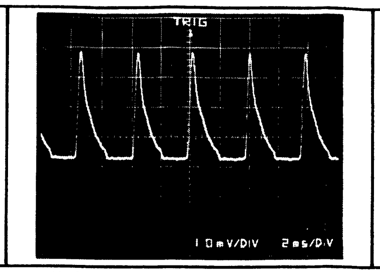
- Upper Tab Voices...............Flute 8′
- Celeste.................................U. Tab Voices
- Volume ... Max. • Upper Key ...C4

❷,❹,❺



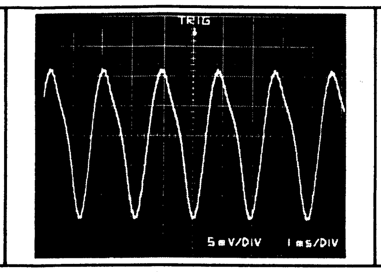
- U. String Ensemble ....ON
- Volume.................................Max.
- Upper Key............................C4

❻



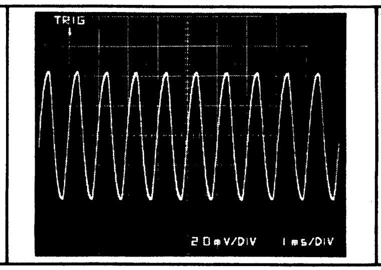
- U. Orchestral Presets ....Trombone
- Volume.................................Max.
- Upper Key............................C4

❼



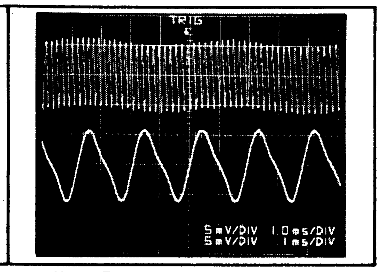
- Upper Tab Voices...............Flute 8′
- Volume.................................Max.
- Upper Key............................C4

❽



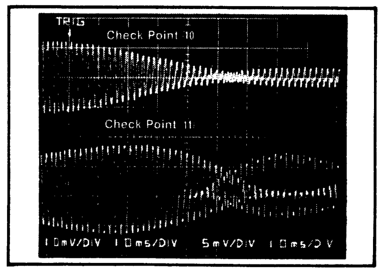
- Record ....ON
- Rhythm Sequencer.............ON
- Lower Key C3

❾



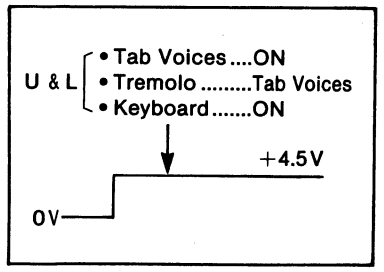
- Upper Tab Voices...............Flute 8′
- Tremolo ....U. Tab Voices, Fast
- Volume.................................Max.
- Upper Key............................C4

❿,⓫



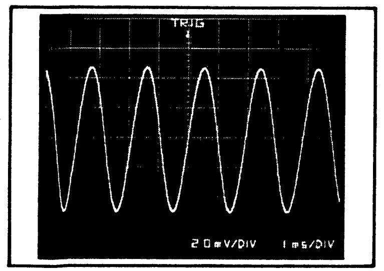
- Upper Tab Voices...............Flute 8′
- Tremolo ....U. Tab Voices, Fast
- Volume ... Max. • Upper Key ... C4

⓯

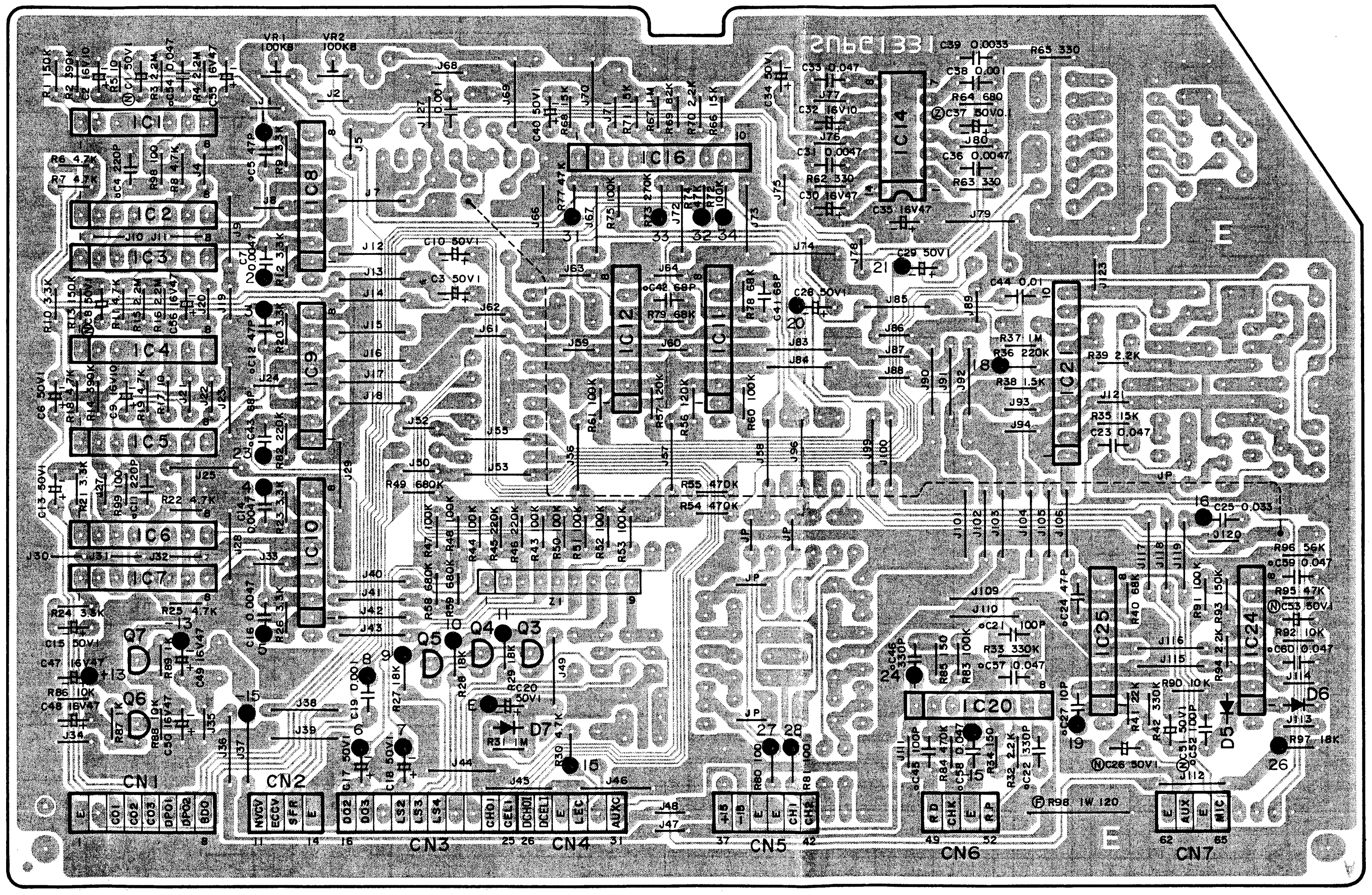


U & L
- Tab Voices....ON
- Tremolo ....Tab Voices
- Keyboard.......ON

⓰



- Upper Tab Voices...............Flute 8′
- U. Tab Volume ....Max.
- Reverb Volume ....Max.
- Upper Key............................C4


VR1 100KB
VR2 100KB
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC14
IC16
IC20
IC21
IC24
IC25
Q3
Q4
Q5
Q6
Q7
D5
D6
D7
E
CN1
CN2
CN3
CN4
CN5
CN6
CN7
E CO1 CO2 CO3 DPO1 DPO2 BDO
NVCV ECCV SFR E
DO2 DO3 LS2 LS3 LS4 CHO1 CEL1 DCHO1 DCEL1 E LEC AUXC
+B -B E CH1 CHL
RD CHK E FP
E AUX MIC
R98 1W 120

SXPG133111

NOTES:
- IC'S

IC1, 4:	SVIGUPC1253H
IC2, 3, 5~7:	SVIGUPC1252H
IC8~12, 24, 25:	SVIGM5218L
IC14:	SVIGLM1894N
IC16, 21:	SVIGM5241L
IC20:	SVIGM5216LL

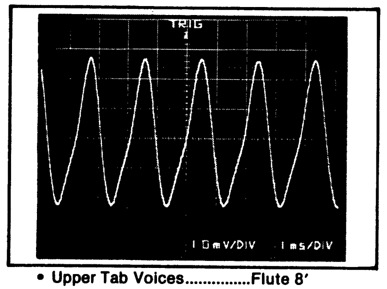
- TRANSISTORS

Q3~5:	2SJ40CD
Q6:	2SC2320LFG
Q7:	2SA933STRS

- DIODES

D5~7:	MA165TA5

㉘



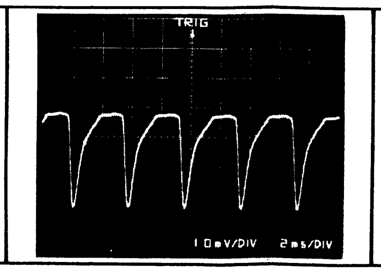
- Upper Tab Voices...............Flute 8′
- Upper Tab Volume ....Max.
- Main Vol., EXP....................Max.
- Reverb Vol. ... Min • Upper Key ... C4

⓲ Reverb Volume Control

- Reverb Volume Control
  - step 1..................−12V
  - step 2..................−5.4V
  - step 3..................−3.2V
  - step 4..................0V

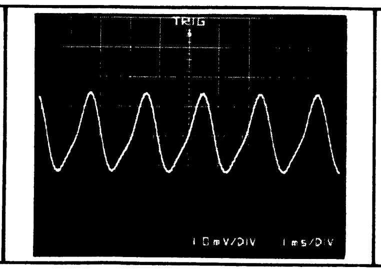
- Reverb Volume ....step 1~4

⑳



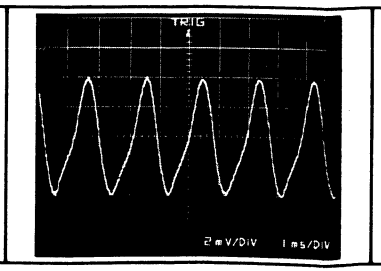
- U. Orchestral Presets ....Trombone
- Volume.................................Max.
- Upper Key............................C4
- Reverb Volumé ....Min.

㉑



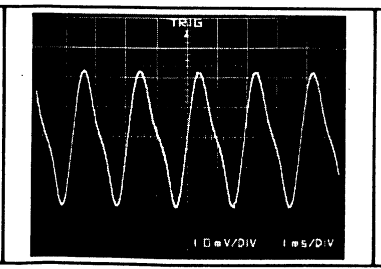
- Upper Tab Voices...............Flute 8′
- Upper Tab Volume ....Max.
- Upper Key............................C4
- Reverb Volume ....Min.

㉓



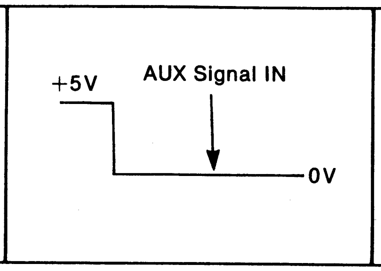
- Upper Tab Voices...............Flute 8′
- Upper Tab Volume ....Max.
- Upper Key............................C4

㉔

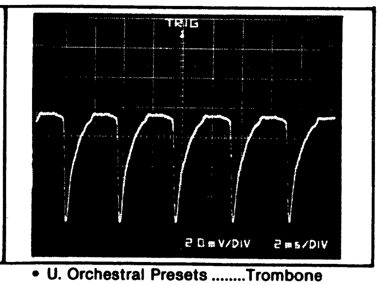


- Upper Tab Voices...............Flute 8′
- Upper Tab Volume ....Max.
- Upper Key............................C4

㉖

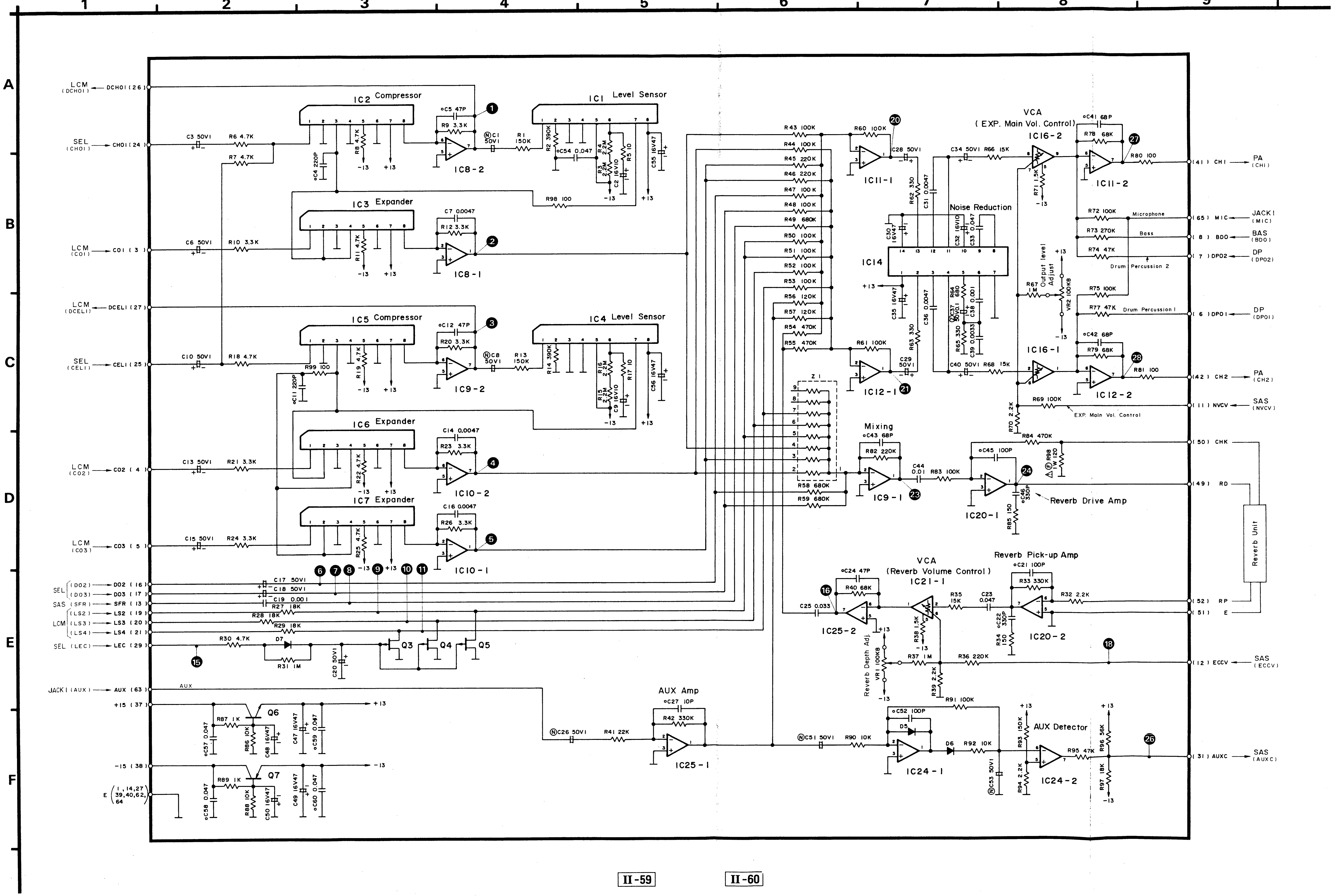

+5V
AUX Signal IN
0V

㉗

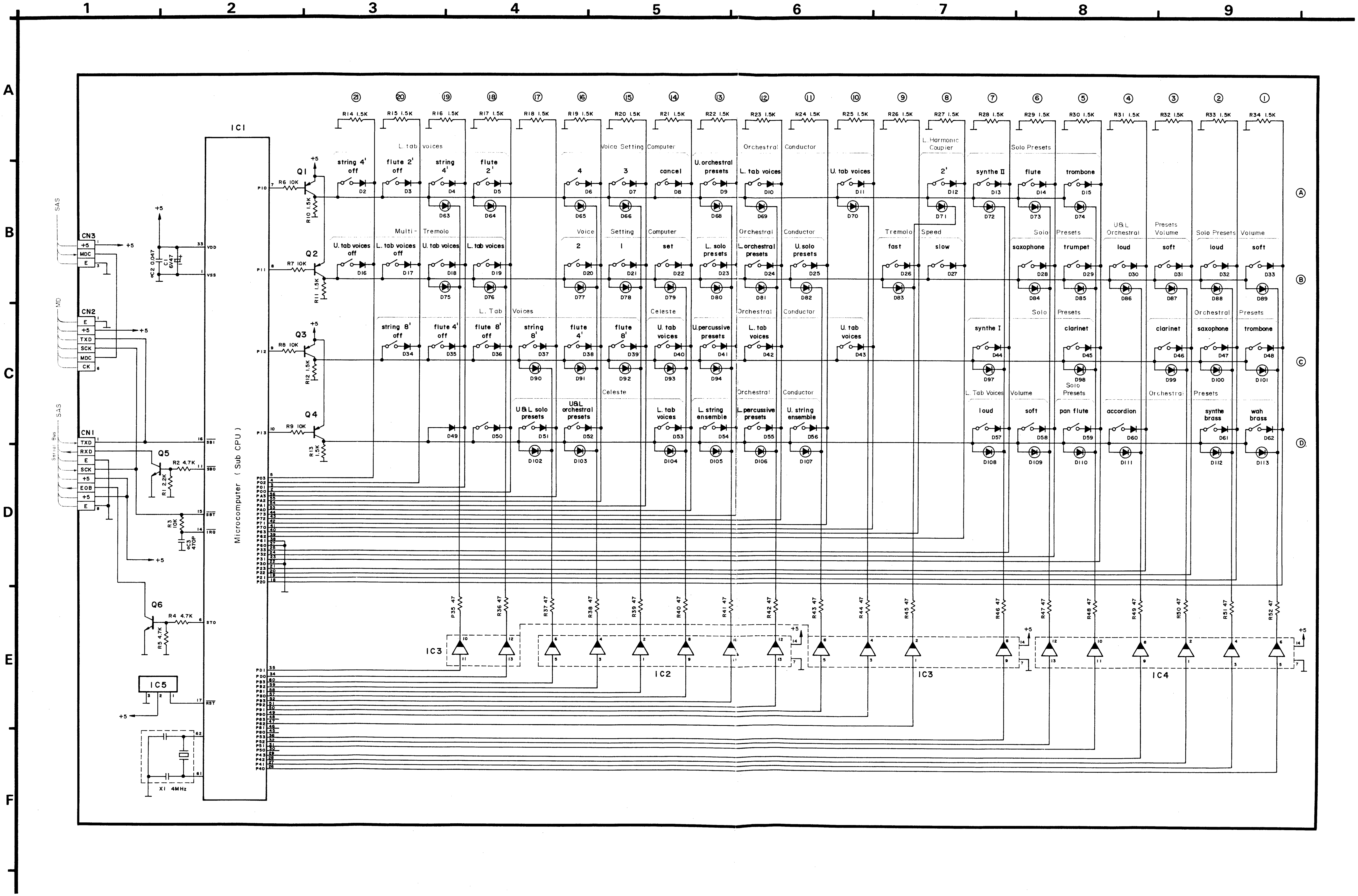


- U. Orchestral Presets ....Trombone
- Volume.................................Max.
- Main Vol., EXP....................Max.
- Reverb Vol. ... Min • Upper Key ... C4

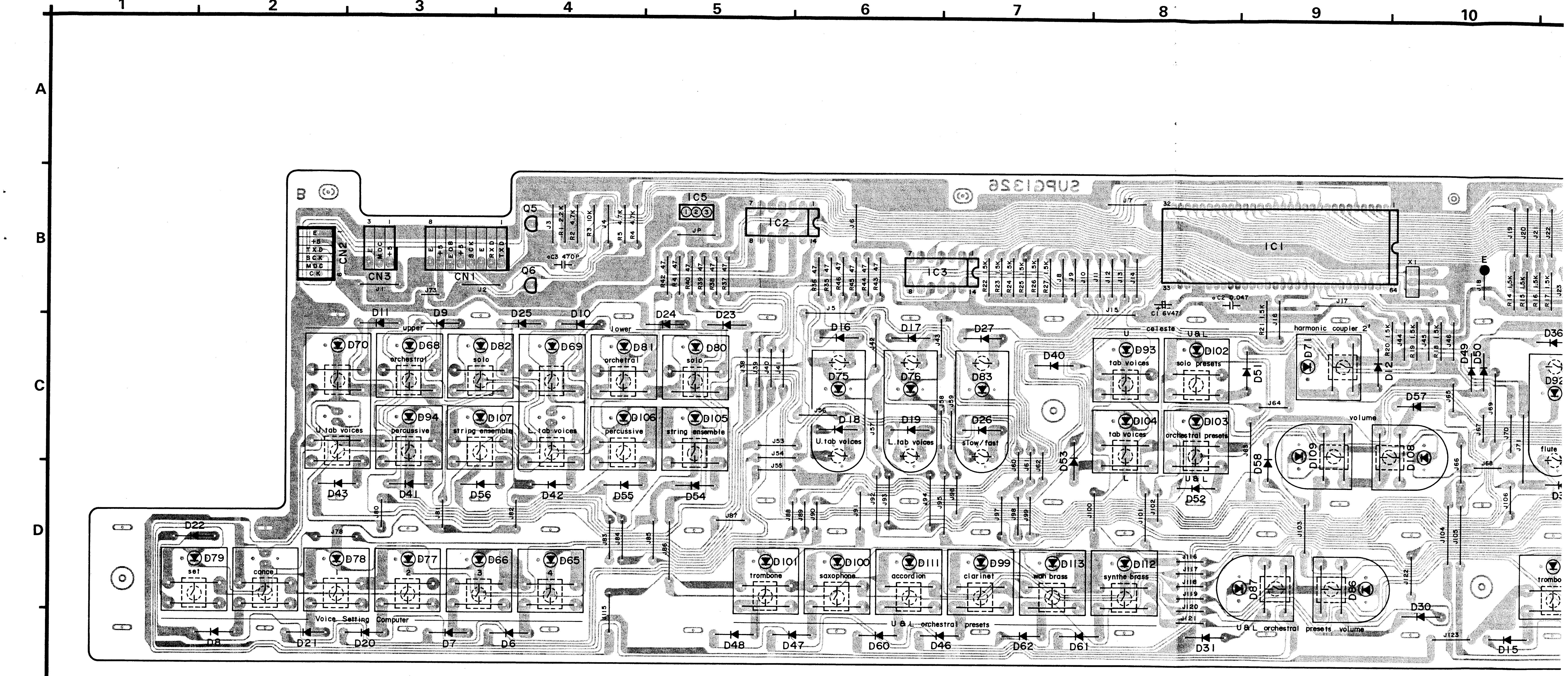
MIXING CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
LCM (DCHO1) ← DCHO1 (26)
SEL (CHO1) → CHO1 (24)
LCM (CO1) → CO1 (3)
LCM (DCEL1) ← DCEL1 (27)
SEL (CEL1) → CEL1 (25)
LCM (CO2) → CO2 (4)
LCM (CO3) → CO3 (5)
SEL (DO2) → DO2 (16)
(DO3) → DO3 (17)
SAS (SFR) → SFR (13)
LCM (LS2) → LS2 (19)
(LS3) → LS3 (20)
(LS4) → LS4 (21)
SEL (LEC) → LEC (29)
JACK1 (AUX) → AUX (63)
+15 (37)
-15 (38)
E (1, 14, 27, 39, 40, 62, 64)
IC2 Compressor
IC1 Level Sensor
IC3 Expander
IC5 Compressor
IC4 Level Sensor
IC6 Expander
IC7 Expander
IC8-2
IC8-1
IC9-2
IC10-2
IC10-1
IC11-1
IC12-1
IC14
Noise Reduction
VCA
(EXP. Main Vol. Control)
IC16-2
IC16-1
IC11-2
IC12-2
Mixing
IC9-1
IC20-1
Reverb Drive Amp
VCA
(Reverb Volume Control)
IC21-1
Reverb Pick-up Amp
IC20-2
IC25-2
Reverb Depth Adj.
VR1 100KB
Output level Adjust
VR2 100KB
AUX Amp
IC25-1
IC24-1
AUX Detector
IC24-2
Q3
Q4
Q5
Q6
Q7
D5
D6
D7
Z1
Microphone
Bass
Drum Percussion 2
Drum Percussion 1
EXP. Main Vol. Control
Reverb Unit
(41) CH1 → PA (CH1)
(65) MIC ← JACK1 (MIC)
(8) BDO ← BAS (BDO)
(7) DPO2 ← DP (DPO2)
(6) DPO1 ← DP (DPO1)
(42) CH2 → PA (CH2)
(11) NVCV ← SAS (NVCV)
(50) CHK
(49) RD
(52) RP
(51) E
(12) ECCV ← SAS (ECCV)
(31) AUXC → SAS (AUXC)
❶
❷
❸
❹
❺
❻
❼
❽
❾
❿
⓫
⓯
⓰
⓲
⓴
㉑
㉓
㉔
㉖
㉗
㉘
R43 100K
R44 100K
R45 220K
R46 220K
R47 100K
R48 100K
R49 680K
R50 100K
R51 100K
R52 100K
R53 100K
R56 120K
R57 120K
R54 470K
R55 470K
R58 680K
R59 680K
R60 100K
R61 100K
R82 220K
R83 100K
R84 470K
R86 120 1W
C43 68P
C44 0.01
C45 100P
C46 330P
R85 150
C28 50V1
C29 50V1
R62 330
R63 330
C31 0.0047
C30 16V47
C35 16V47
C36 0.0047
C32 16V10
C33 0.047
C37 50V1
C38 0.001
C39 0.0033
R64 680
R65 330
C34 50V1
R66 15K
C40 50V1
R68 15K
R71 1.5K
C41 68P
R78 68K
R80 100
R72 100K
R73 270K
R74 47K
R67 1M
R75 100K
R77 47K
C42 68P
R79 68K
R81 100
R69 100K
R70 2.2K
C3 50V1
R6 4.7K
R7 4.7K
C4 220P
R8 4.7K
C5 47P
R9 3.3K
C1 50V1
R1 150K
R2 390K
C54 0.047
R3 2.2M
R4 2.2M
C2 16V10
R5 10
C55 16V47
R98 100
C6 50V1
R10 3.3K
R11 4.7K
C7 0.0047
R12 3.3K
C10 50V1
R18 4.7K
R99 100
C11 220P
R19 4.7K
C12 47P
R20 3.3K
C8 50V1
R13 150K
R14 390K
R15 2.2M
R16 2.2M
C9 16V10
R17 10
C56 16V47
C13 50V1
R21 3.3K
R22 4.7K
C14 0.0047
R23 3.3K
C15 50V1
R24 3.3K
R25 4.7K
C16 0.0047
R26 3.3K
C17 50V1
C18 50V1
C19 0.001
R27 18K
R28 18K
R29 18K
R30 4.7K
R31 1M
C20 50V1
C24 47P
R40 68K
C25 0.033
R35 15K
R38 1.5K
C23 0.047
C22 330P
R34 150
C21 100P
R33 330K
R32 2.2K
R37 1M
R36 220K
R39 2.2K
R91 100K
C27 10P
R42 330K
C26 50V1
R41 22K
C51 50V1
R90 10K
C52 100P
R92 10K
C53 50V1
R93 150K
R94 2.2K
R95 47K
R96 56K
R97 18K
R87 1K
R86 10K
C57 0.047
C48 16V47
C47 16V47
C59 0.047
R89 1K
R88 10K
C58 0.047
C50 16V47
C49 16V47
C60 0.047
+13
-13
AUX

CPR UPPER CONTROL PANEL RIGHT CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
㉑
⑳
⑲
⑱
⑰
⑯
⑮
⑭
⑬
⑫
⑪
⑩
⑨
⑧
⑦
⑥
⑤
④
③
②
①
R14 1.5K
R15 1.5K
R16 1.5K
R17 1.5K
R18 1.5K
R19 1.5K
R20 1.5K
R21 1.5K
R22 1.5K
R23 1.5K
R24 1.5K
R25 1.5K
R26 1.5K
R27 1.5K
R28 1.5K
R29 1.5K
R30 1.5K
R31 1.5K
R32 1.5K
R33 1.5K
R34 1.5K
IC1
Microcomputer (Sub CPU)
VDD
VSS
SBI
SBO
SBT
IRQ
STO
RST
+5
C2 0.047
C1 6V47
CN3
+5
MDC
E
SAS
CN2
E
+5
TXD
SCK
MDC
CK
MD
CN1
TXD
RXD
E
SCK
+5
EOB
+5
E
Serial Bus
SAS
Q1
Q2
Q3
Q4
Q5
Q6
R6 10K
R7 10K
R8 10K
R9 10K
R10 1.5K
R11 1.5K
R12 1.5K
R13 1.5K
R2 4.7K
R1 2.2K
R3 10K
C3 470P
R4 4.7K
R5 4.7K
IC5
X1 4MHz
P10
P11
P12
P13
L. tab voices
string 4' off
flute 2' off
string 4'
flute 2'
Voice Setting
4
3
Computer
cancel
U. orchestral presets
Orchestral
L. tab voices
Conductor
U. tab voices
L. Harmonic Coupler
2'
synthe II
Solo Presets
flute
trombone
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D15
D63
D64
D65
D66
D68
D69
D70
D71
D72
D73
D74
Multi-Tremolo
U. tab voices off
L. tab voices off
U. tab voices
L. tab voices
Voice Setting
2
1
Computer
set
L. solo presets
Orchestral
L. orchestral presets
Conductor
U. solo presets
Tremolo Speed
fast
slow
Solo Presets
saxophone
trumpet
U&L Orchestral
loud
Presets Volume
soft
Solo Presets Volume
loud
soft
D16
D17
D18
D19
D20
D21
D22
D23
D24
D25
D26
D27
D28
D29
D30
D31
D32
D33
D75
D76
D77
D78
D79
D80
D81
D82
D83
D84
D85
D86
D87
D88
D89
L. Tab Voices
string 8' off
flute 4' off
flute 8' off
string 8'
flute 4'
flute 8'
Celeste
U. tab voices
U. percussive presets
Orchestral
L. tab voices
Conductor
U. tab voices
synthe I
Solo Presets
clarinet
clarinet
Orchestral Presets
saxophone
trombone
D34
D35
D36
D37
D38
D39
D40
D41
D42
D43
D44
D45
D46
D47
D48
D90
D91
D92
D93
D94
D97
D98
D99
D100
D101
Celeste
U&L solo presets
U&L orchestral presets
L. tab voices
L. string ensemble
Orchestral
L. percussive presets
Conductor
U. string ensemble
L. Tab Voices Volume
loud
soft
Solo Presets
pan flute
accordion
Orchestral Presets
synthe brass
wah brass
D49
D50
D51
D52
D53
D54
D55
D56
D57
D58
D59
D60
D61
D62
D102
D103
D104
D105
D106
D107
D108
D109
D110
D111
D112
D113
Ⓐ
Ⓑ
Ⓒ
Ⓓ
R35 47
R36 47
R37 47
R38 47
R39 47
R40 47
R41 47
R42 47
R43 47
R44 47
R45 47
R46 47
R47 47
R48 47
R49 47
R50 47
R51 47
R52 47
IC3
IC2
IC3
IC4
+5

UPPER CONTROL PANEL RIGHT CIRCUIT BOARD


1
2
3
4
5
6
7
8
9
10
A
B
C
D
SUPC1326
CN2
CN3
CN1
Q5
Q6
IC5
JP
IC2
IC3
IC1
X1
upper
lower
celeste
U&L
harmonic coupler 2
orchestral
solo
U tab voices
percussive
string ensemble
L. tab voices
U. tab voices
L. tab voices
slow/fast
tab voices
solo presets
orchestral presets
volume
flute
set
cancel
1
2
3
4
Voice Setting Computer
trombone
saxophone
accordion
clarinet
wah brass
synthe brass
U&L orchestral presets
U&L orchestral presets volume
D79
D78
D77
D66
D65
D101
D100
D111
D99
D113
D112
D70
D68
D82
D69
D81
D80
D94
D107
D106
D105
D75
D76
D83
D93
D102
D104
D103
D109
D108
D87
D86
D71

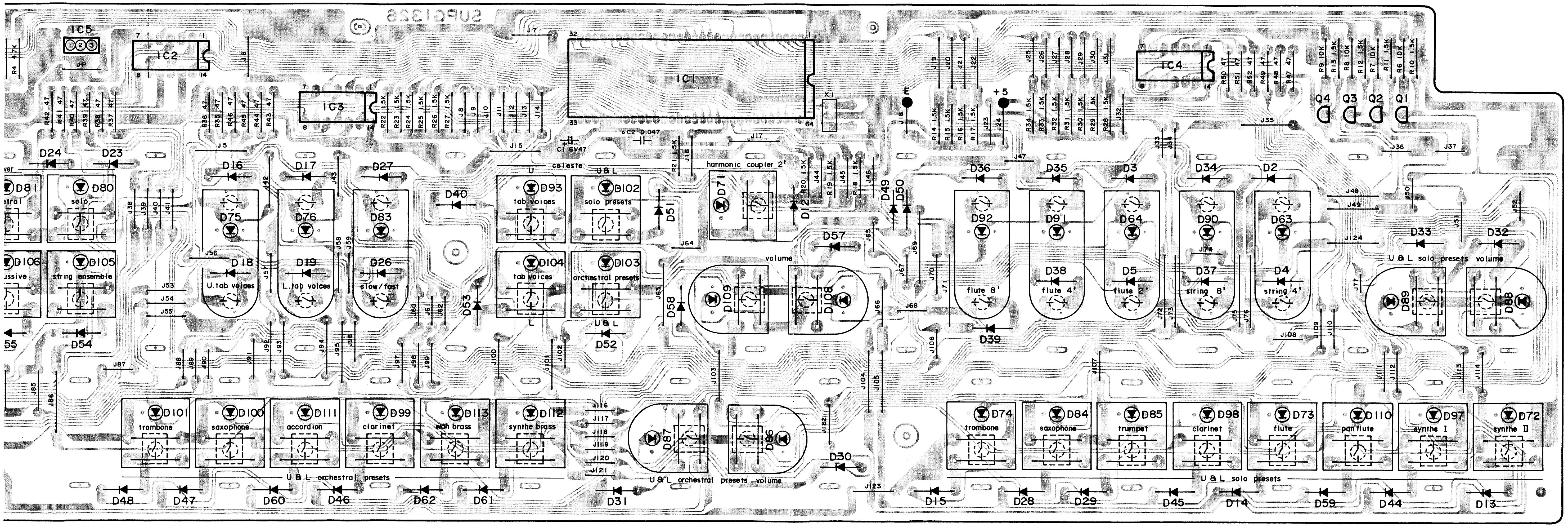
NOTES
• IC'S
IC1:
IC2~
IC5:
• TRAN
Q1~4
Q5, 6:

IT BOARD

5 6 7 8 9 10 11 12 13 14

• SX-EX60-K **SXPG132611**

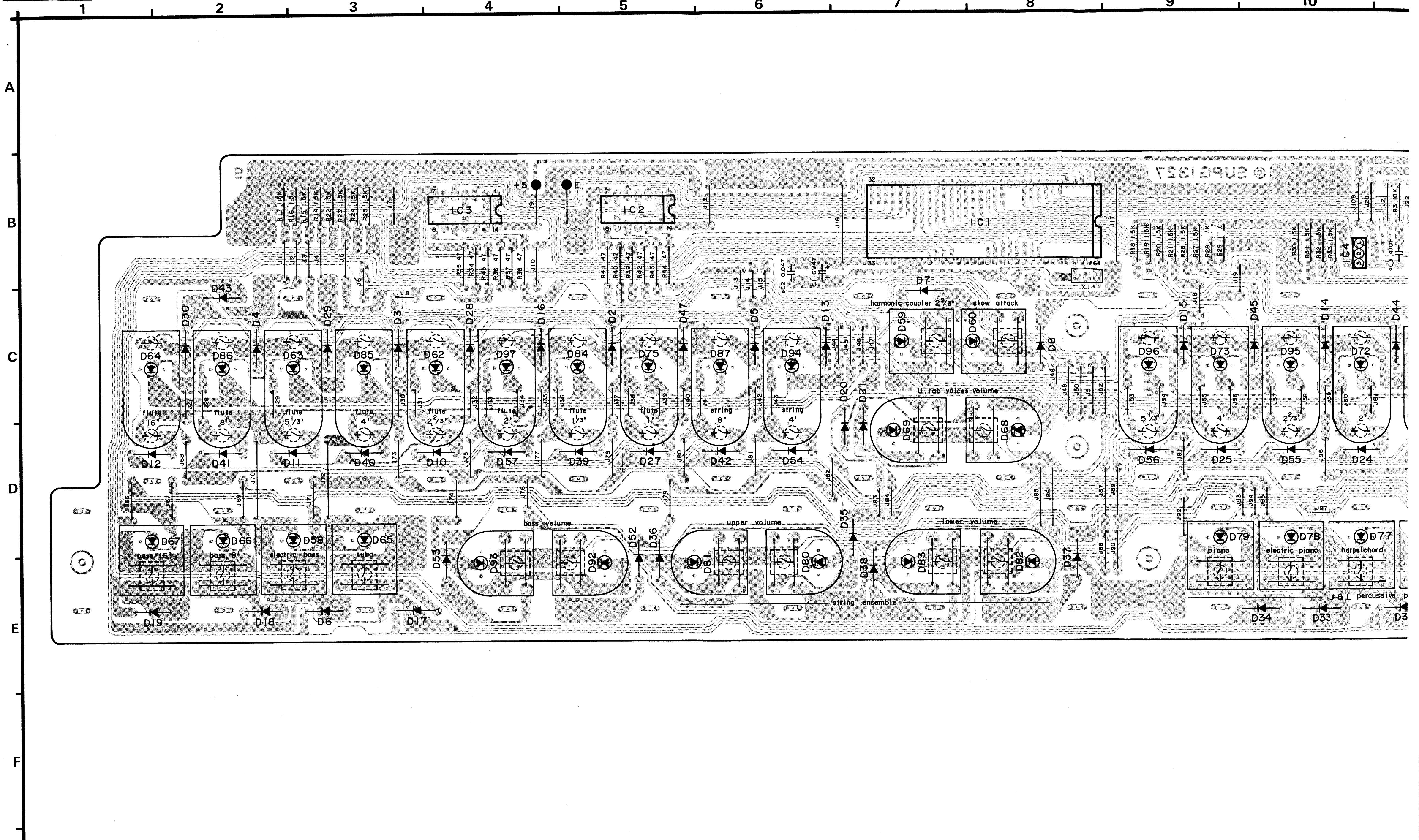
• SX-EX60 **SXPG132621**



SUPG1326
IC5
IC2
IC3
IC1
IC4
JP
X1
E
+5
Q4 Q3 Q2 Q1
C1 6V47
C2 0.047
R4 4.7K
R42 47 R41 47 R40 47 R39 47 R38 47 R37 47
R36 47 R35 47 R46 47 R45 47 R44 47 R43 47
R22 1.5K R23 1.5K R24 1.5K R25 1.5K R26 1.5K R27 1.5K
R21 1.5K R20 1.5K R19 1.5K R18 1.5K
R14 1.5K R15 1.5K R16 1.5K R17 1.5K
R34 1.5K R33 1.5K R32 1.5K R31 1.5K R30 1.5K R29 1.5K R28 1.5K
R50 47 R51 47 R52 47 R49 47 R48 47 R47 47
R9 10K R13 1.5K R8 10K R12 1.5K R7 10K R11 1.5K R6 10K R10 1.5K
D24 D23 D81 D80 D16 D17 D27 D40 D93 D102 D71 D36 D35 D3 D34 D2
D75 D76 D83 D51 D12 D49 D50 D92 D91 D64 D90 D63 D33 D32
D106 D105 D18 D19 D26 D104 D103 D57 D53 D58 D109 D108 D38 D5 D37 D4 D89 D88
D54 D52 D39
D101 D100 D111 D99 D113 D112 D87 D86 D30 D74 D84 D85 D98 D73 D110 D97 D72
D48 D47 D60 D46 D62 D61 D31 D15 D28 D29 D45 D14 D59 D44 D13
solo
string ensemble
U.tab voices
L.tab voices
slow/fast
U
celeste
U&L
tab voices
solo presets
orchestral presets
L
harmonic coupler 2'
volume
flute 8'
flute 4'
flute 2'
string 8'
string 4'
U & L solo presets volume
trombone
saxophone
accordion
clarinet
wah brass
synthe brass
U & L orchestral presets
U & L orchestral presets volume
trumpet
flute
pan flute
synthe I
synthe II
U & L solo presets

NOTES:
- IC'S
  - IC1: MN15524PGP
  - IC2~4: SVIGM53217
  - IC5: MN1280R
- TRANSISTORS
  - Q1~4: 2SA830B
  - Q5, 6: 2SC1047C
- DIODES
  - D2~62: MA162A
  - D63, 64, 68~70, 72~76, 80~94, 97~113: SEL2210SLFM1 (red)
  - D65, 66, 71, 77~79: SEL2710KLFM1 (yellow)

CPL UPPER CONTROL PANEL LEFT CIRCUIT BOARD



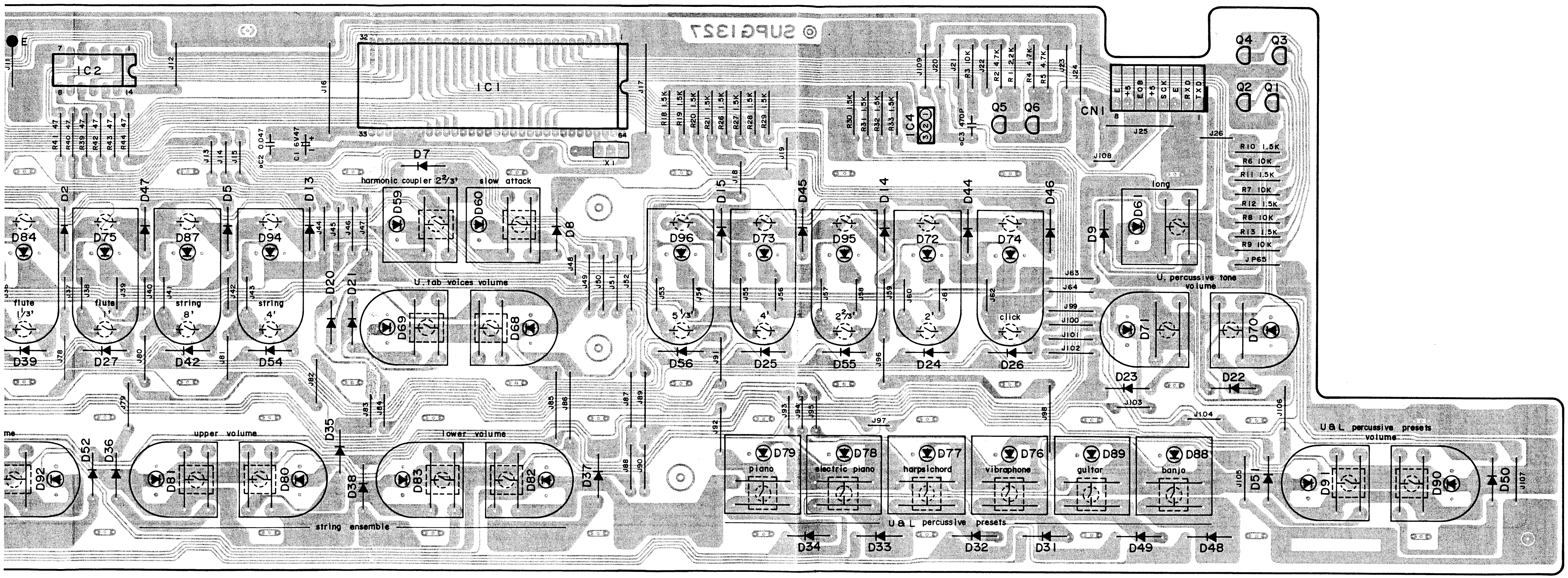
1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
SUPG1327
+5
E
IC1
IC2
IC3
IC4
X1
C1 6V47
C2 0.047
C3 470P
R17 1.5K
R16 1.5
R15 1.5K
R14 1.5K
R22 1.5K
R23 1.5K
R24 1.5K
R25 1.5K
R35 47
R34 47
R45 47
R36 47
R37 47
R38 47
R41 47
R40 47
R39 47
R42 47
R43 47
R44 47
R18 1.5K
R19 1.5K
R20 1.5K
R21 1.5K
R26 1.5K
R27 1.5K
R30 1.5K
R31 1.5K
R32 1.5K
R33 1.5K
R3 10K
flute 16'
flute 8'
flute 5 1/3'
flute 4'
flute 2 2/3'
flute 2'
flute 1 1/3'
flute 1'
string 8'
string 4'
harmonic coupler 2 2/3'
slow attack
U. tab voices volume
5 1/3'
4'
2 2/3'
2'
bass 16'
bass 8'
electric bass
tuba
bass volume
upper volume
lower volume
string ensemble
piano
electric piano
harpsichord
U&L percussive

OARD

5 6 7 8 9 10 11 12 13 14

- SX-EX60-K
SXPG132711

- SX-EX60
SXPG132721

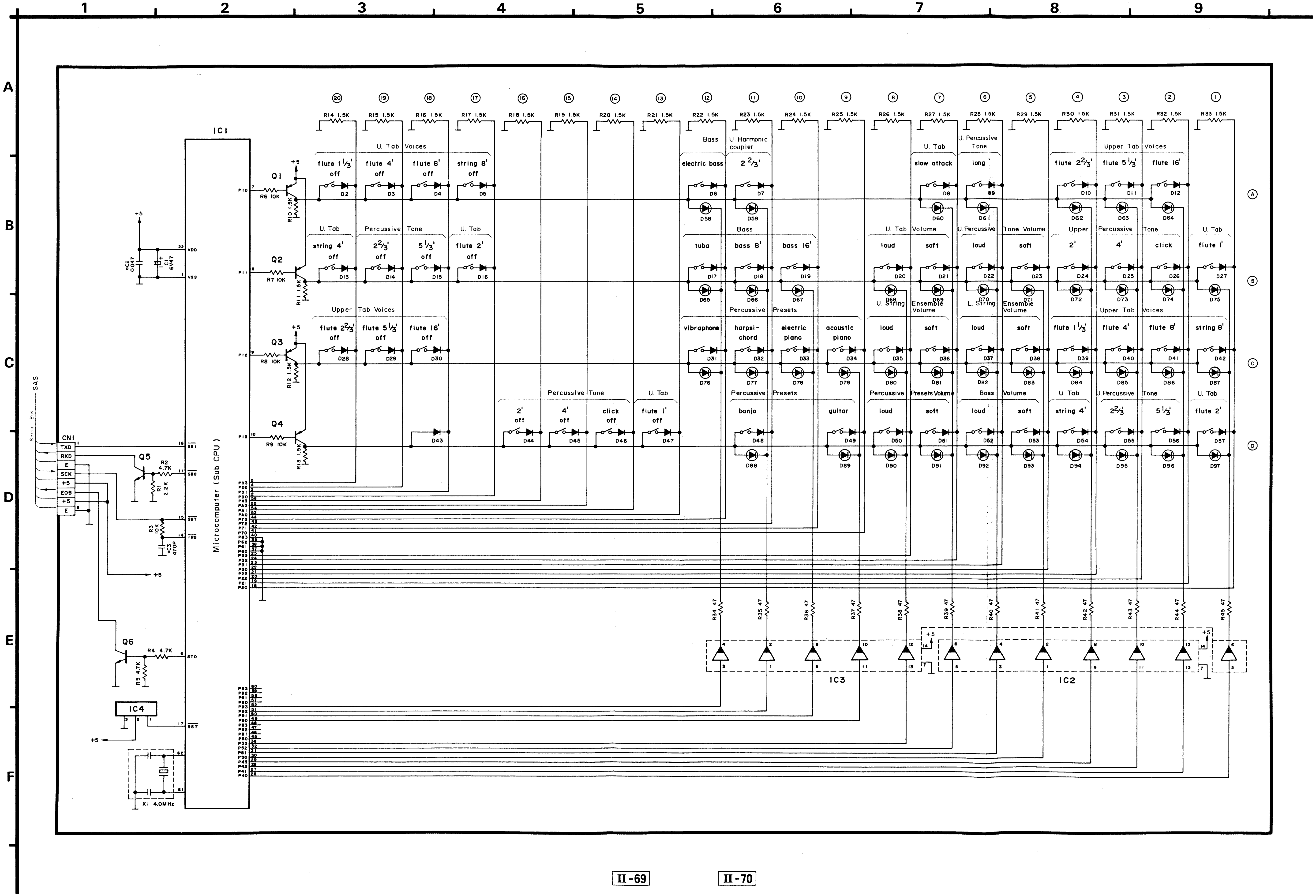

SUPG1327
IC1
IC2
IC4
CN1
X1
Q1
Q2
Q3
Q4
Q5
Q6
E
+5
EOB
+5
SCK
E
RXD
TXD
R1 2.2K
R2 4.7K
R3 10K
R4 4.7K
R5 4.7K
R6 10K
R7 10K
R8 10K
R9 10K
R10 1.5K
R11 1.5K
R12 1.5K
R13 1.5K
R18 1.5K
R19 1.5K
R20 1.5K
R21 1.5K
R26 1.5K
R27 1.5K
R28 1.5K
R29 1.5K
R30 1.5K
R31 1.5K
R32 1.5K
R33 1.5K
R39 47
R40 47
R41 47
R42 47
R43 47
R44 47
C1 6V47
C2 0.047
C3 470P
harmonic coupler 2⅔'
slow attack
long
U. tab voices volume
U. percussive tone volume
flute 1⅓'
flute 1'
string 8'
string 4'
5⅓'
4'
2⅔'
2'
click
upper volume
lower volume
string ensemble
piano
electric piano
harpsichord
vibraphone
guitar
banjo
U&L percussive presets
U&L percussive presets volume
D84
D75
D87
D94
D59
D60
D61
D96
D73
D95
D72
D74
D69
D68
D71
D70
D92
D81
D80
D83
D82
D79
D78
D77
D76
D89
D88
D91
D90
D2
D5
D7
D8
D9
D13
D4
D14
D15
D20
D21
D22
D23
D24
D25
D26
D27
D31
D32
D33
D34
D35
D36
D37
D38
D39
D42
D44
D45
D46
D47
D48
D49
D50
D51
D52
D54
D55
D56
JP65

NOTES:

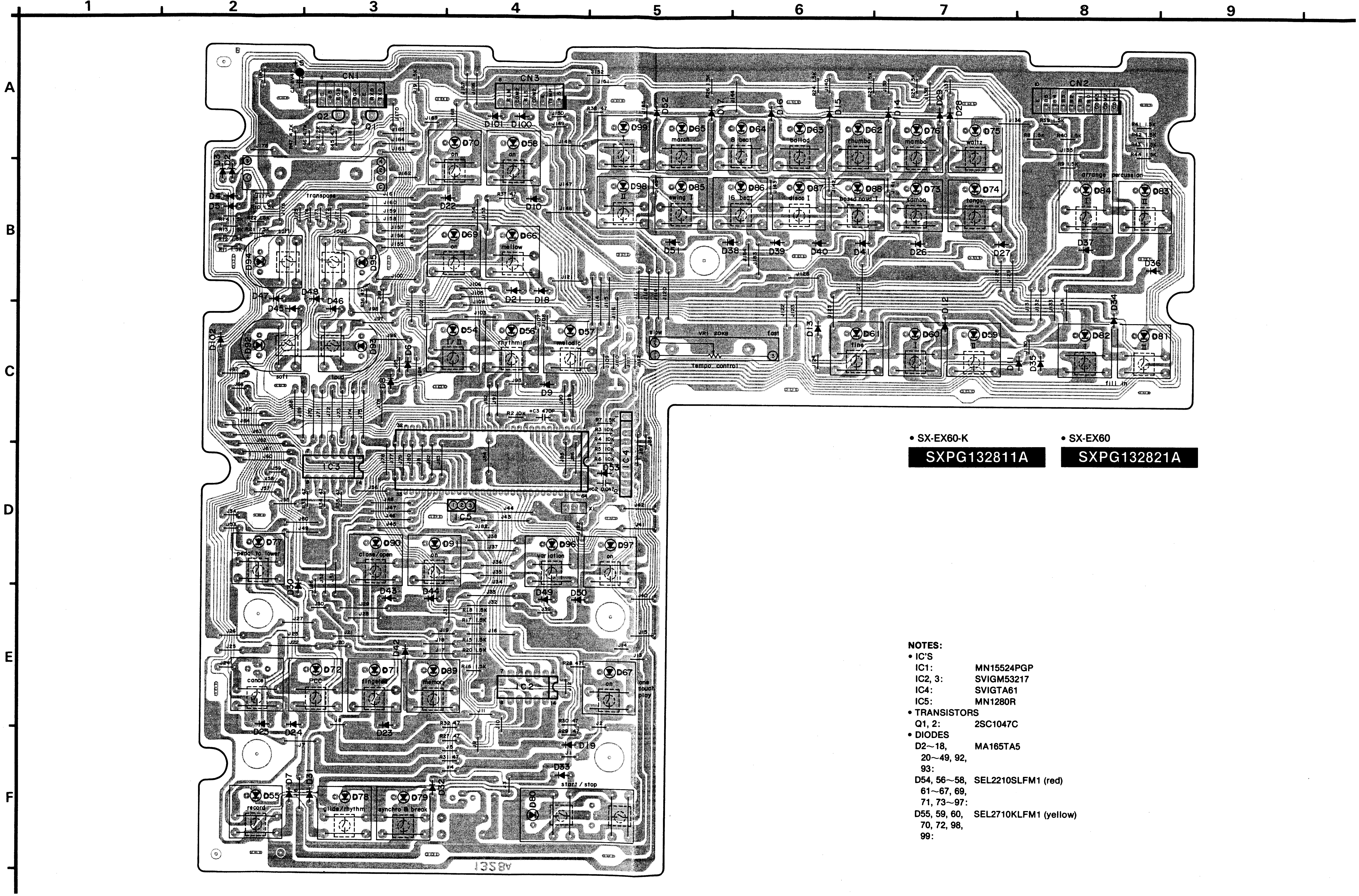
- IC'S
  - IC1: MN15524PGP
  - IC2, 3: SVIGM53217
  - IC4: MN1280R
- TRANSISTORS
  - Q1～4: 2SA830B
  - Q5, 6: 2SC1047C
- DIODES
  - D2～57: MA162A
  - D58, 60～97: SEL2210SLFM1 (red)
  - D59: SEL2710KLFM1 (yellow)

CPL

UPPER CONTROL PANEL LEFT CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
IC1
Microcomputer (Sub CPU)
IC2
IC3
IC4
Q1
Q2
Q3
Q4
Q5
Q6
CN1
TXD
RXD
E
SCK
+5
EOB
Serial Bus
SAS
C1 6V47
C2 0.047
C3 470P
R1 2.2K
R2 4.7K
R3 10K
R4 4.7K
R5 4.7K
R6 10K
R7 10K
R8 10K
R9 10K
R10 1.5K
R11 1.5K
R12 1.5K
R13 1.5K
X1 4.0MHz
VDD
VSS
SBI
SBO
SBT
IRQ
STO
RST
R14 1.5K
R15 1.5K
R16 1.5K
R17 1.5K
R18 1.5K
R19 1.5K
R20 1.5K
R21 1.5K
R22 1.5K
R23 1.5K
R24 1.5K
R25 1.5K
R26 1.5K
R27 1.5K
R28 1.5K
R29 1.5K
R30 1.5K
R31 1.5K
R32 1.5K
R33 1.5K
U. Tab Voices
flute 1 1/3' off
flute 4' off
flute 8' off
string 8' off
Bass
electric bass
U. Harmonic coupler
2 2/3'
U. Tab
slow attack
U. Percussive Tone
long
Upper Tab Voices
flute 2 2/3'
flute 5 1/3'
flute 16'
U. Tab
string 4' off
Percussive Tone
2 2/3' off
5 1/3' off
U. Tab
flute 2' off
tuba
Bass
bass 8'
bass 16'
U. Tab Volume
loud
soft
U. Percussive Tone Volume
loud
soft
Upper Percussive Tone
2'
4'
click
U. Tab
flute 1'
Upper Tab Voices
flute 2 2/3' off
flute 5 1/3' off
flute 16' off
vibraphone
Percussive Presets
harpsi-chord
electric piano
acoustic piano
U. String Ensemble Volume
loud
soft
L. String Ensemble Volume
loud
soft
Upper Tab Voices
flute 1 1/3'
flute 4'
flute 8'
string 8'
Percussive Tone
2' off
4' off
click off
U. Tab
flute 1' off
Percussive Presets
banjo
guitar
Percussive Presets Volume
loud
soft
Bass Volume
loud
soft
U. Tab
string 4'
U. Percussive Tone
2 2/3'
5 1/3'
U. Tab
flute 2'
R34 47
R35 47
R36 47
R37 47
R38 47
R39 47
R40 47
R41 47
R42 47
R43 47
R44 47
R45 47

CPSL LOWER CONTROL PANEL LEFT CIRCUIT BOARD


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
CN1
CN2
CN3
Q1
Q2
IC1
IC2
IC3
IC4
IC5
VR1 20KB
slow
fast
tempo control
transpose
soft
loud
on
mellow
I/II
rhythmic
melodic
march
8 beat
ballad
rhumba
mambo
waltz
swing
16 beat
disco I
bossa nova I
samba
tango
arrange
percussion
fine
fill in
pedal to lower
close/open
variation
cancel
PCC
fingered
memory
one touch play
record
glide/rhythm
synchro & break
start / stop
D70
D58
D69
D66
D54
D56
D57
D99
D65
D64
D63
D62
D76
D75
D98
D85
D86
D87
D88
D73
D74
D84
D83
D61
D60
D59
D82
D81
D94
D95
D92
D93
D77
D90
D91
D96
D97
D72
D71
D89
D67
D55
D78
D79
D80
D100
D101
D22
D10
D21
D18
D9
D51
D38
D39
D40
D41
D26
D27
D37
D36
D34
D35
D11
D12
D13
D52
D17
D16
D15
D14
D29
D28
D48
D46
D47
D45
D6
D8
D53
D43
D44
D49
D50
D30
D42
D25
D24
D23
D19
D33
D7
D3
D32
D2
D4
D5
D31
D1
1328A

- SX-EX60-K
SXPG132811A

- SX-EX60
SXPG132821A

NOTES:

- IC'S

IC1:	MN15524PGP
IC2, 3:	SVIGM53217
IC4:	SVIGTA61
IC5:	MN1280R

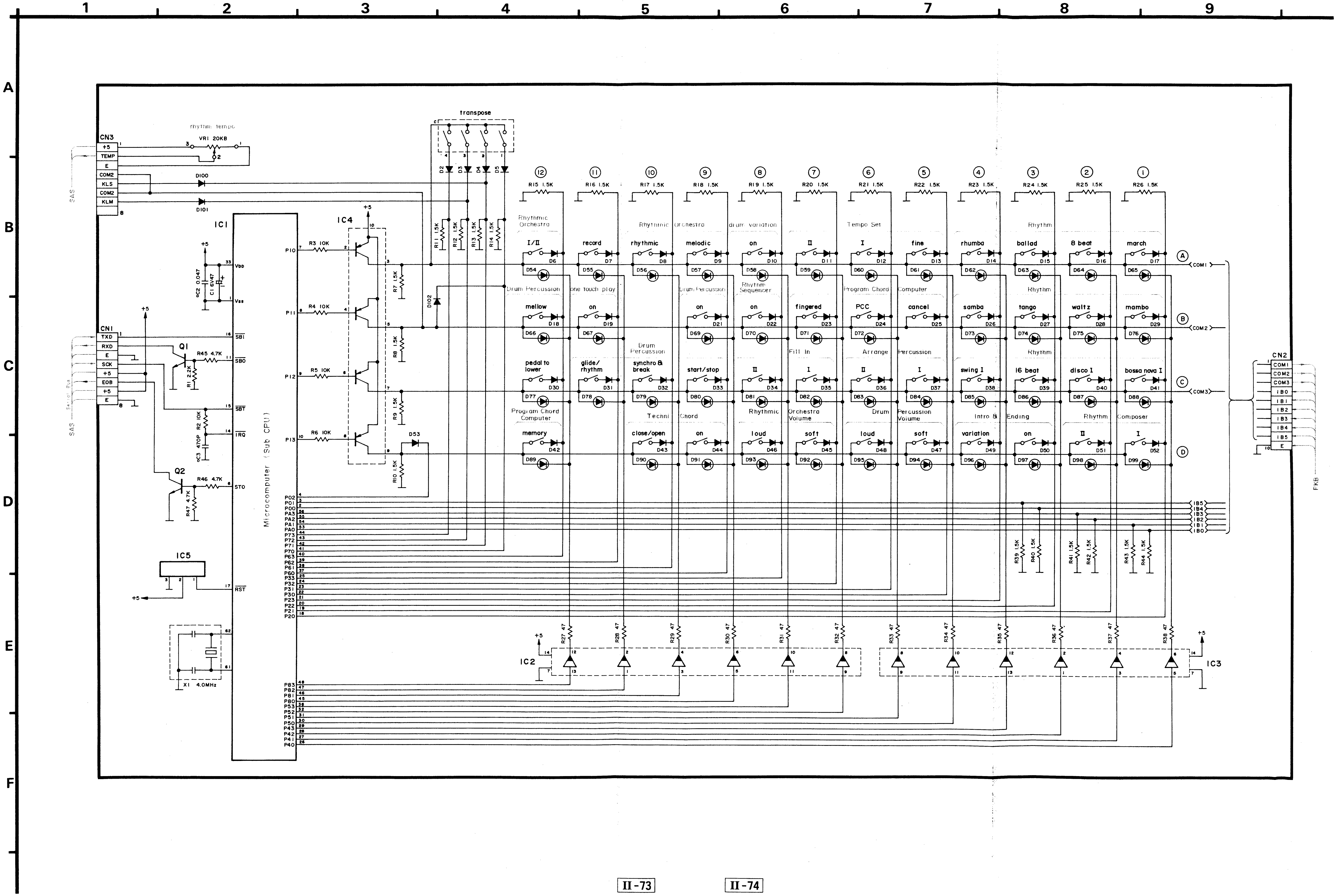
- TRANSISTORS

Q1, 2:	2SC1047C

- DIODES

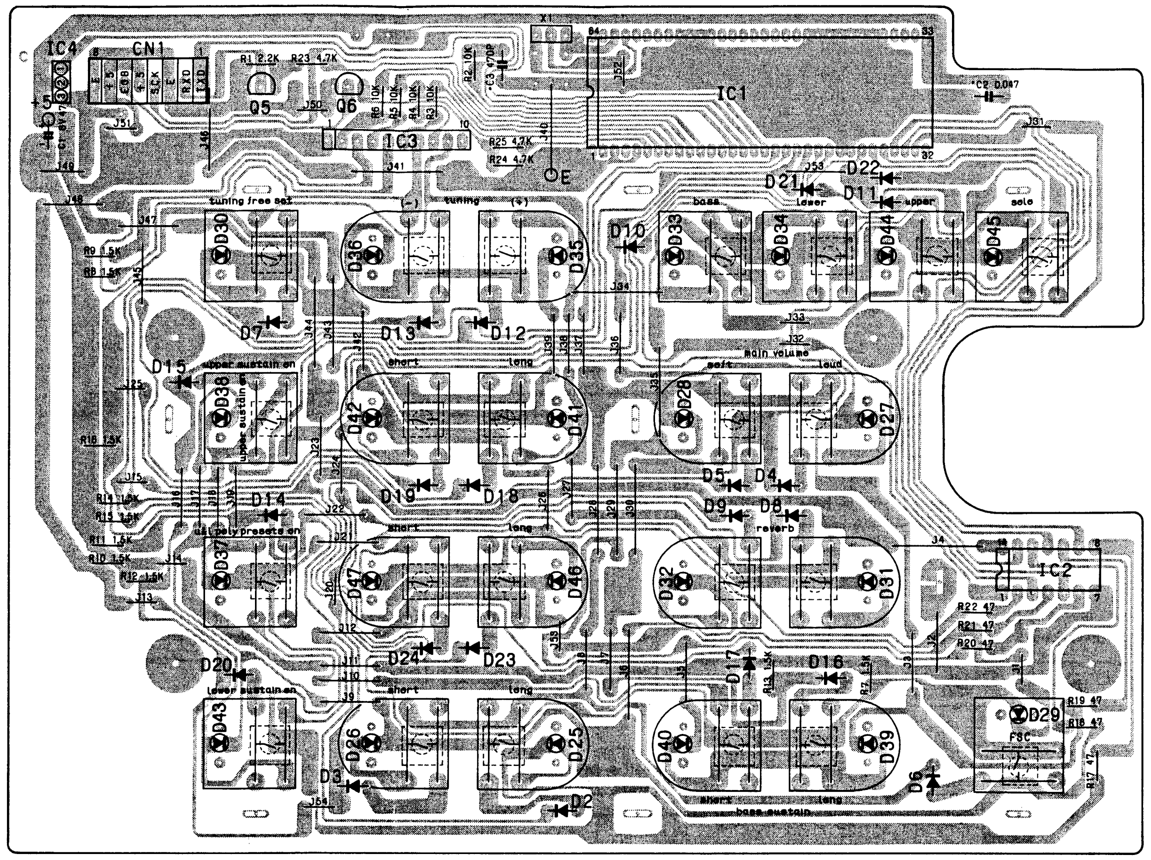
D2∼18, 20∼49, 92, 93:	MA165TA5
D54, 56∼58, 61∼67, 69, 71, 73∼97:	SEL2210SLFM1 (red)
D55, 59, 60, 70, 72, 98, 99:	SEL2710KLFM1 (yellow)

CPSL LOWER CONTROL PANEL LEFT CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
CN3
+5
TEMP
E
COM2
KLS
COM2
KLM
SAS
rhythm tempo
VR1 20KB
D100
D101
CN1
TXD
RXD
E
SCK
+5
EOB
+5
E
Q1
R45 4.7K
R1 2.2K
Q2
R46 4.7K
R47 4.7K
R2 10K
C3 470P
C2 0.047
C1 6V47
IC1
Microcomputer (Sub CPU)
VDD
VSS
SBI
SBO
SBT
IRQ
STO
RST
IC5
+5
X1 4.0MHz
P10
P11
P12
P13
R3 10K
R4 10K
R5 10K
R6 10K
IC4
R7 1.5K
R8 1.5K
R9 1.5K
R10 1.5K
D53
D102
transpose
D2
D3
D4
D5
R11 1.5K
R12 1.5K
R13 1.5K
R14 1.5K
P02
P01
P00
PA3
PA2
PA1
PA0
P73
P72
P71
P70
P63
P62
P61
P60
P33
P32
P31
P30
P23
P22
P21
P20
P83
P82
P81
P80
P53
P52
P51
P50
P43
P42
P41
P40
⑫
⑪
⑩
⑨
⑧
⑦
⑥
⑤
④
③
②
①
R15 1.5K
R16 1.5K
R17 1.5K
R18 1.5K
R19 1.5K
R20 1.5K
R21 1.5K
R22 1.5K
R23 1.5K
R24 1.5K
R25 1.5K
R26 1.5K
Rhythmic Orchestra
I/II
record
Rhythmic Orchestra
rhythmic
melodic
drum variation
on
II
Tempo Set
I
fine
Rhythm
rhumba
ballad
8 beat
march
Drum Percussion
mellow
one touch play
on
Drum Percussion
on
Rhythm Sequencer
on
fingered
Program Chord
PCC
Computer
cancel
Rhythm
samba
tango
waltz
mambo
pedal to lower
glide/rhythm
Drum Percussion
synchro & break
start/stop
II
Fill In
I
Arrange
II
Percussion
I
swing I
Rhythm
16 beat
disco I
bossa nova I
Program Chord Computer
memory
Techni Chord
close/open
on
Rhythmic Orchestra Volume
loud
soft
Drum Percussion Volume
loud
soft
Intro & Ending
variation
on
Rhythm Composer
II
I
D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 D16 D17
D54 D55 D56 D57 D58 D59 D60 D61 D62 D63 D64 D65
D18 D19 D21 D22 D23 D24 D25 D26 D27 D28 D29
D66 D67 D69 D70 D71 D72 D73 D74 D75 D76
D30 D31 D32 D33 D34 D35 D36 D37 D38 D39 D40 D41
D77 D78 D79 D80 D81 D82 D83 D84 D85 D86 D87 D88
D42 D43 D44 D46 D45 D48 D47 D49 D50 D51 D52
D89 D90 D91 D93 D92 D95 D94 D96 D97 D98 D99
Ⓐ COM1
Ⓑ COM2
Ⓒ COM3
Ⓓ
IB5
IB4
IB3
IB2
IB1
IB0
R39 1.5K
R40 1.5K
R41 1.5K
R42 1.5K
R43 1.5K
R44 1.5K
CN2
COM1
COM2
COM3
IB0
IB1
IB2
IB3
IB4
IB5
E
FKB
R27 47
R28 47
R29 47
R30 47
R31 47
R32 47
R33 47
R34 47
R35 47
R36 47
R37 47
R38 47
IC2
IC3
+5

CPSR LOWER CONTROL PANEL RIGHT CIRCUIT BOARD

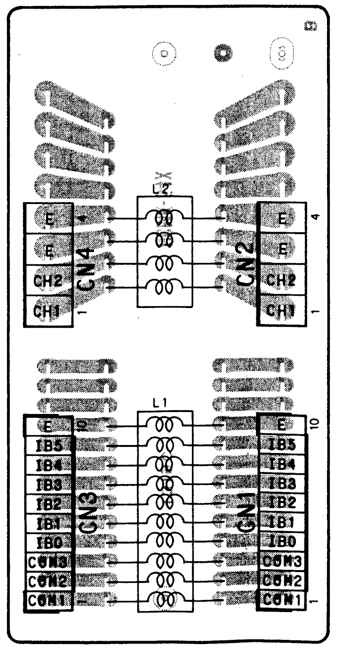
- SX-EX60-K **SXPG132811B**
- SX-EX60 **SXPG132821B**


IC4
CN1
Q5
Q6
IC3
IC1
IC2
X1
tuning free set
upper sustain on
U&L poly presets on
lower sustain on
main volume
bass sustain
reverb
FSC
solo

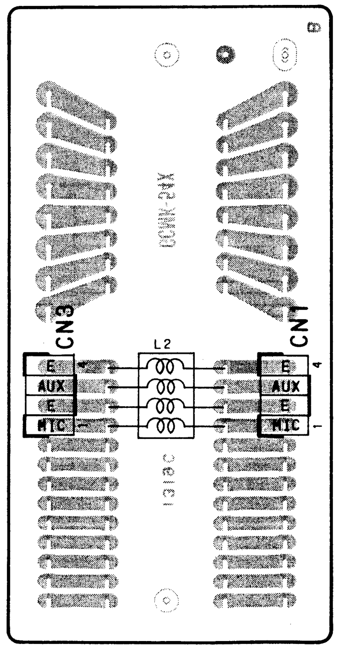
LF1 LF2 FILTER CIRCUIT BOARD

* **NOTE:** PRODUCTS FOR [EZ] ONLY

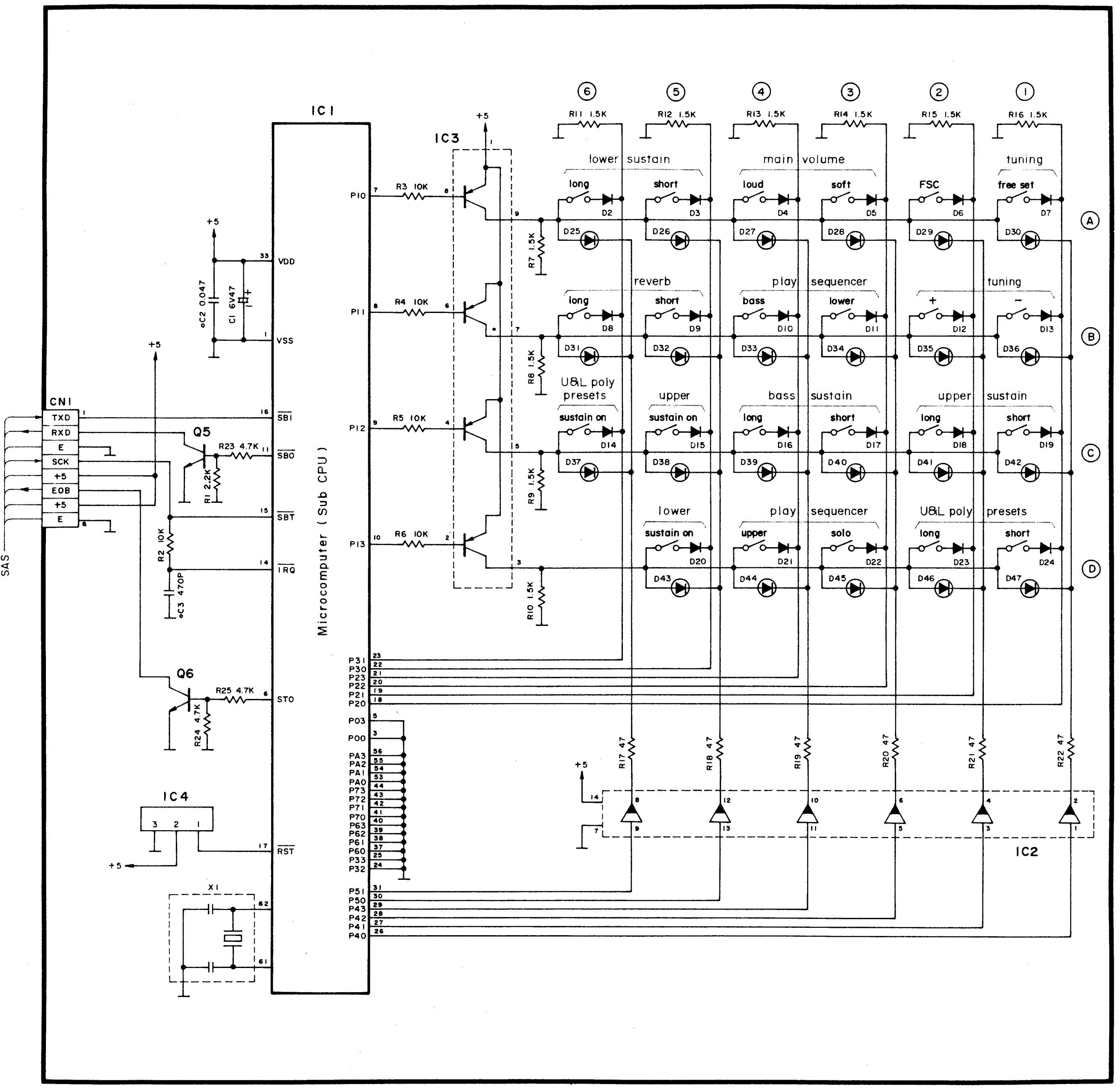
LF1 **SXPG131951C**


CN4
CN2
CN3
CN1
L1
L2
E
CH2
CH1
IB5
IB4
IB3
IB2
IB1
IB0
CON3
CON2
CON1

LF2 **SXPG131991C**


CN3
CN1
L2
E
AUX
MIC

CPSR LOWER CONTROL PANEL RIGHT CIRCUIT DIAGRAM


IC1
Microcomputer (Sub CPU)
IC2
IC3
IC4
CN1
TXD
RXD
E
SCK
+5
EOB
Serial Bus
SAS
Q5
Q6
X1
R23 4.7K
R25 4.7K
R1 2.2K
R2 10K
R24 4.7K
C1 6V47
C2 0.047
C3 470P
R3 10K
R4 10K
R5 10K
R6 10K
VDD
VSS
SBI
SBO
SBT
IRQ
STO
RST
P10
P11
P12
P13
lower sustain
long
short
main volume
loud
soft
FSC
tuning
free set
reverb
play sequencer
bass
lower
U&L poly presets
sustain on
upper
bass sustain
upper sustain
lower
play sequencer
solo
U&L poly presets

NOTES:

- IC'S

IC1:	MN15524PGP
IC2:	SVIGM53217
IC3:	SVIGTA61
IC4:	MN1280R

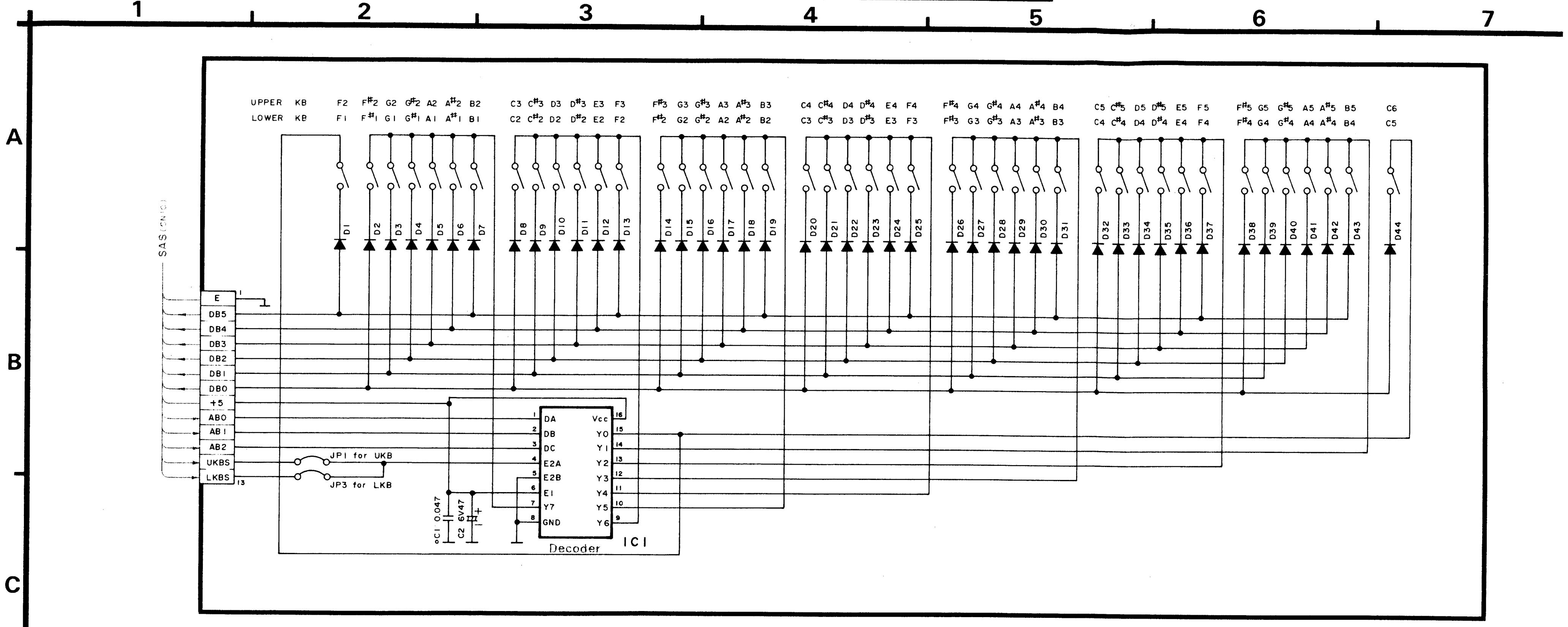
- TRANSISTORS

Q5, 6:	2SC1047C

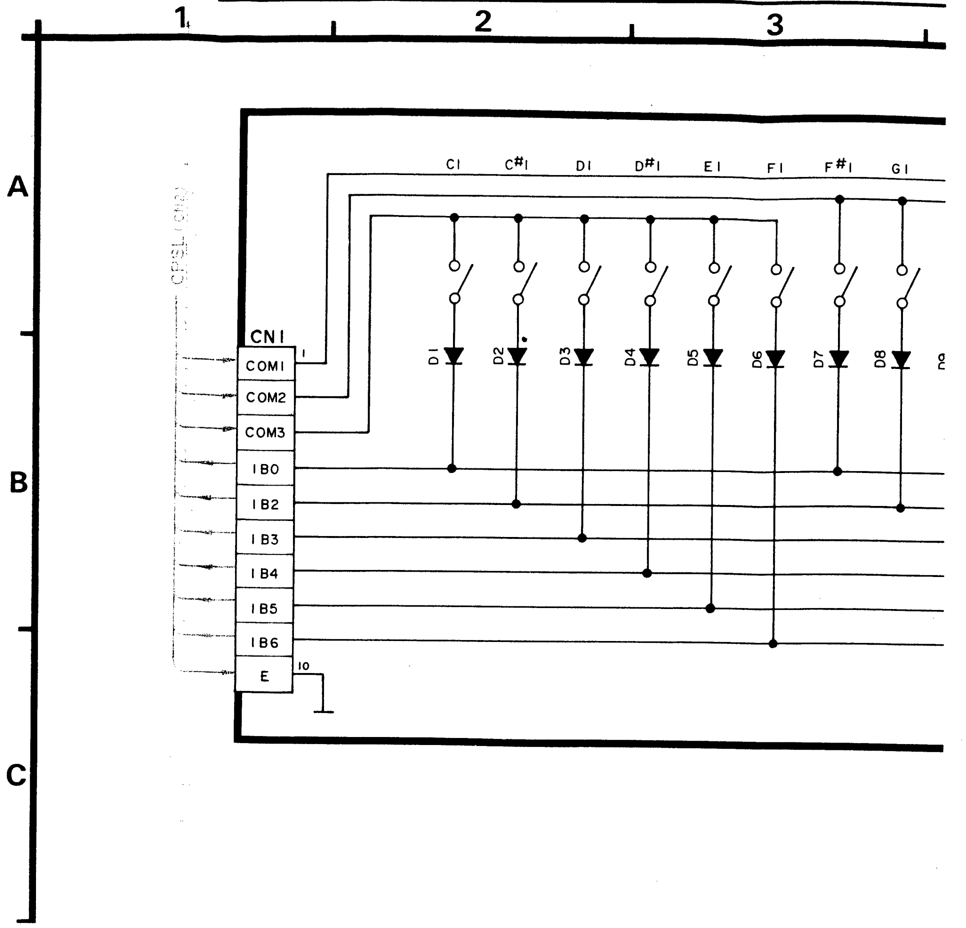
- DIODES

D2~24:	MA165TA5
D25~28, 30~32, 35~43, 46, 47:	SEL2210SLFM1 (red)
D29, 33, 34, 44, 45:	SEL2710KLFM1 (yellow)

MKB MANUAL KEYBOARD CIRCUIT DIAGRAM

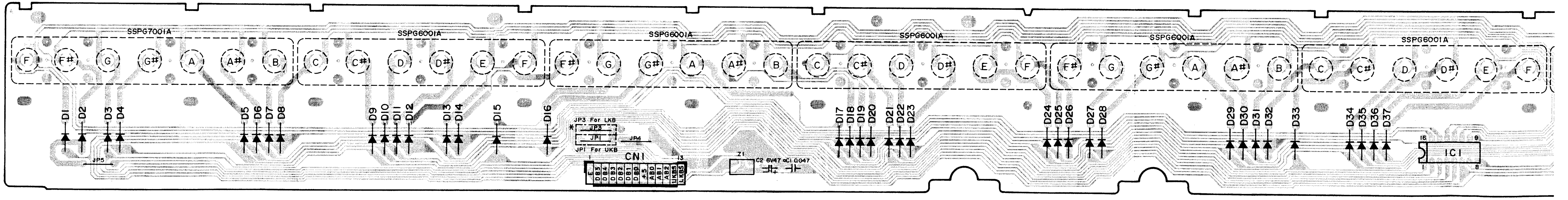

1
2
3
4
5
6
7
A
B
C
UPPER KB
LOWER KB
F2 F#2 G2 G#2 A2 A#2 B2 C3 C#3 D3 D#3 E3 F3 F#3 G3 G#3 A3 A#3 B3 C4 C#4 D4 D#4 E4 F4 F#4 G4 G#4 A4 A#4 B4 C5 C#5 D5 D#5 E5 F5 F#5 G5 G#5 A5 A#5 B5 C6
F1 F#1 G1 G#1 A1 A#1 B1 C2 C#2 D2 D#2 E2 F2 F#2 G2 G#2 A2 A#2 B2 C3 C#3 D3 D#3 E3 F3 F#3 G3 G#3 A3 A#3 B3 C4 C#4 D4 D#4 E4 F4 F#4 G4 G#4 A4 A#4 B4 C5
D1 … D44
SAS(CN1)
E
DB5
DB4
DB3
DB2
DB1
DB0
+5
AB0
AB1
AB2
UKBS
LKBS
JP1 for UKB
JP3 for LKB
C1 0.047
C2 6V47
DA
DB
DC
E2A
E2B
E1
Y7
GND
Vcc
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Decoder
IC1

PKB PEDAL KEYBOARD CIRCUIT D

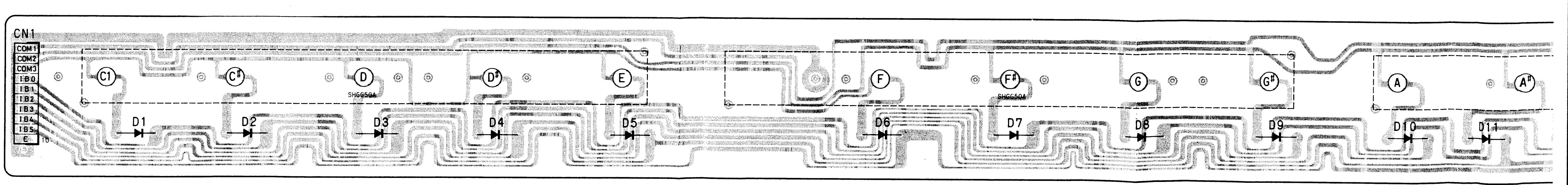

1
2
3
A
B
C
CN1
COM1
COM2
COM3
IB0
IB2
IB3
IB4
IB5
IB6
E
C1 C#1 D1 D#1 E1 F1 F#1 G1
D1 D2 D3 D4 D5 D6 D7 D8

NOTES:
- IC
  IC1: SVIGM74LS138
- DIODES
  D1~44: MA165TA5

MKB MANUAL KEYBOARD CIRCUIT BOARD

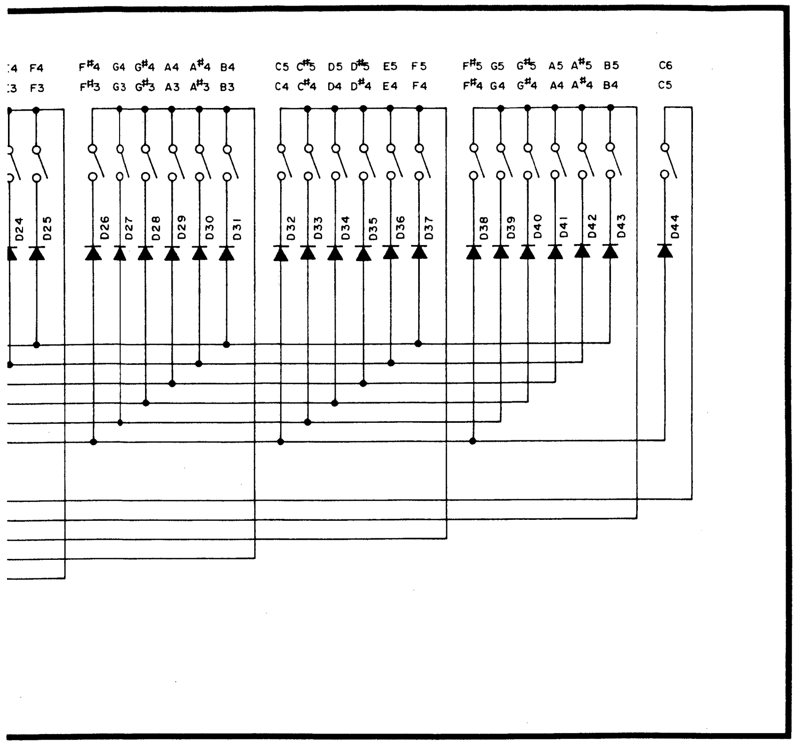

D
E
SSPG7001A
SSPG6001A
F F# G G# A A# B C C# D D# E F
D1 … D37
JP3 For LKB
JP5
JP1
JP4
JP1 For UKB
CN1
E DB5 DB4 DB3 DB2 DB1 DB0 +5 AB0 AB1 AB2 UKBS LKBS
Z1
C2 6V47
C1 0.047
IC1

PKB PEDAL KEYBOARD CIRCUIT BOARD


F
CN1
COM1
COM2
COM3
IB0
IB1
IB2
IB3
IB4
IB5
E
C1 C# D D# E F F# G G# A A#
SHG650A
D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11

M

5 6 7

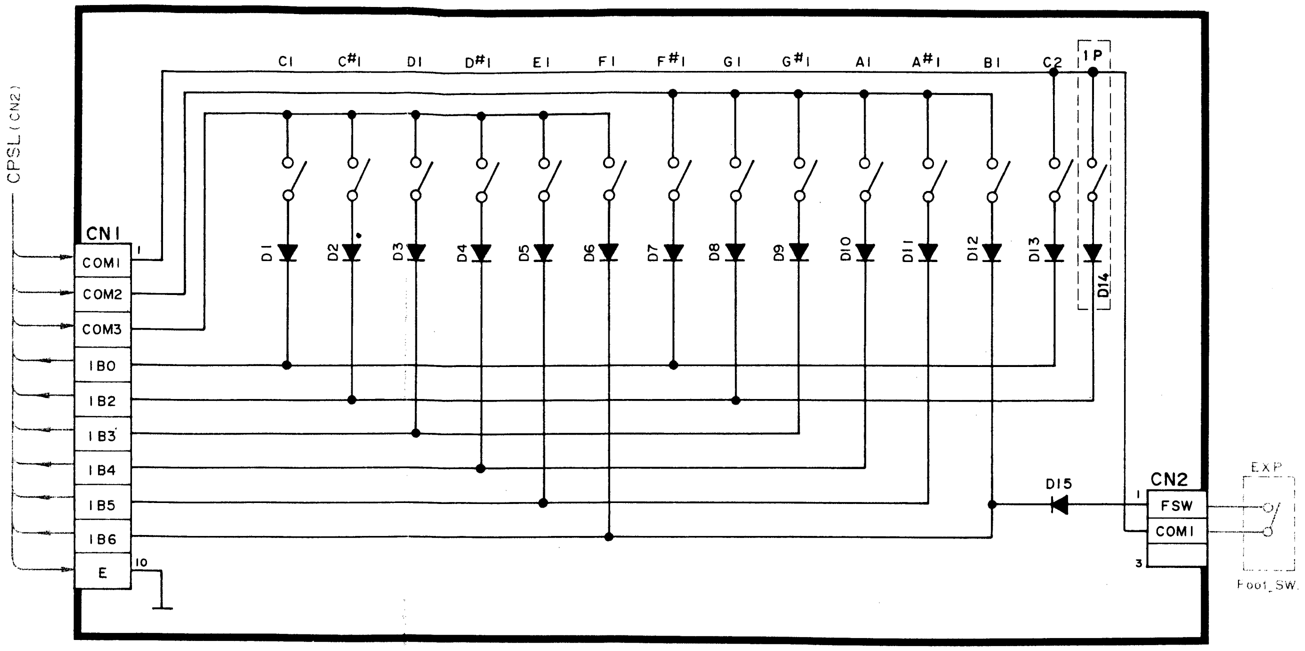

F#4 G4 G#4 A4 A#4 B4
F#3 G3 G#3 A3 A#3 B3
C5 C#5 D5 D#5 E5 F5
C4 C#4 D4 D#4 E4 F4
F#5 G5 G#5 A5 A#5 B5
F#4 G4 G#4 A4 A#4 B4
C6
C5
D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D36 D37 D38 D39 D40 D41 D42 D43 D44

NOTES:
- IC
  IC1: SVIGM74LS138
- DIODES
  D1~44: MA165TA5

PKB PEDAL KEYBOARD CIRCUIT DIAGRAM

1 2 3 4 5

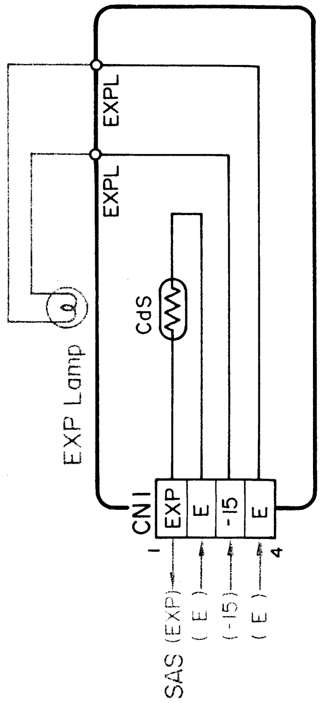
A B C


CPSL (CN2)
CN1
COM1
COM2
COM3
IB0
IB2
IB3
IB4
IB5
IB6
E
1
10
C1 C#1 D1 D#1 E1 F1 F#1 G1 G#1 A1 A#1 B1 C2 1P
D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14
D15
CN2
FSW
COM1
1
3
EXP
Foot SW

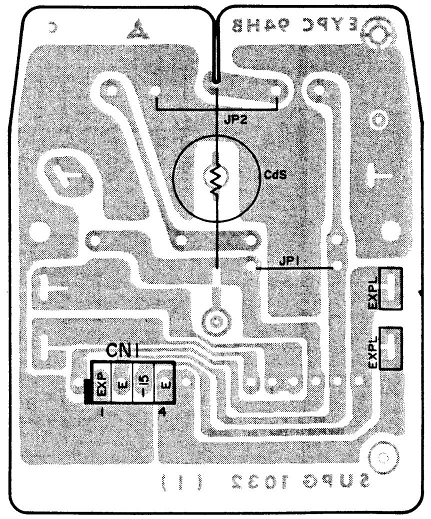
NOTES:
- DIODES
  D1~13, 15: MA162A

EXP EXP CIRCUIT

6 7

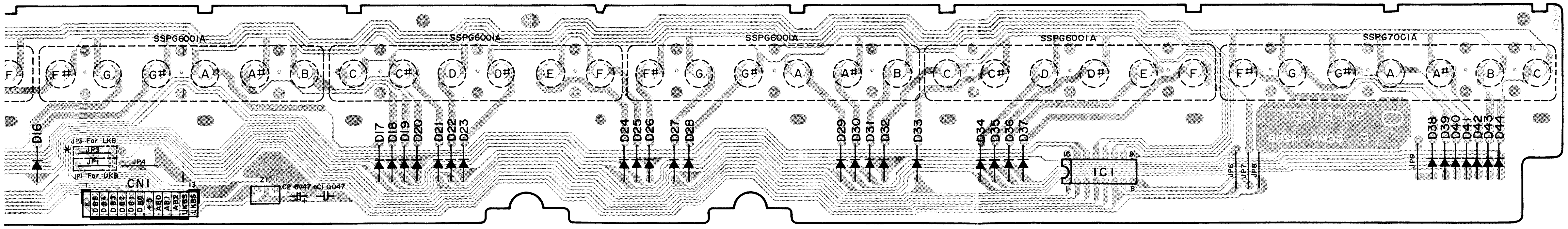

EXPL
EXPL
CdS
EXP Lamp
CN1
EXP
E
-15
E
1
4
SAS (EXP)
(E)
(-15)
(E)

EXP P.C.B. **SXPG103211**

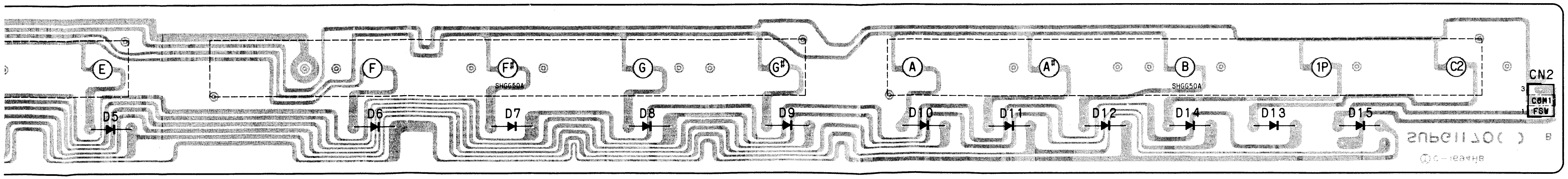

JP2
CdS
JP1
EXPL
EXPL
CN1
EXP
E
-15
E
1
4

RD

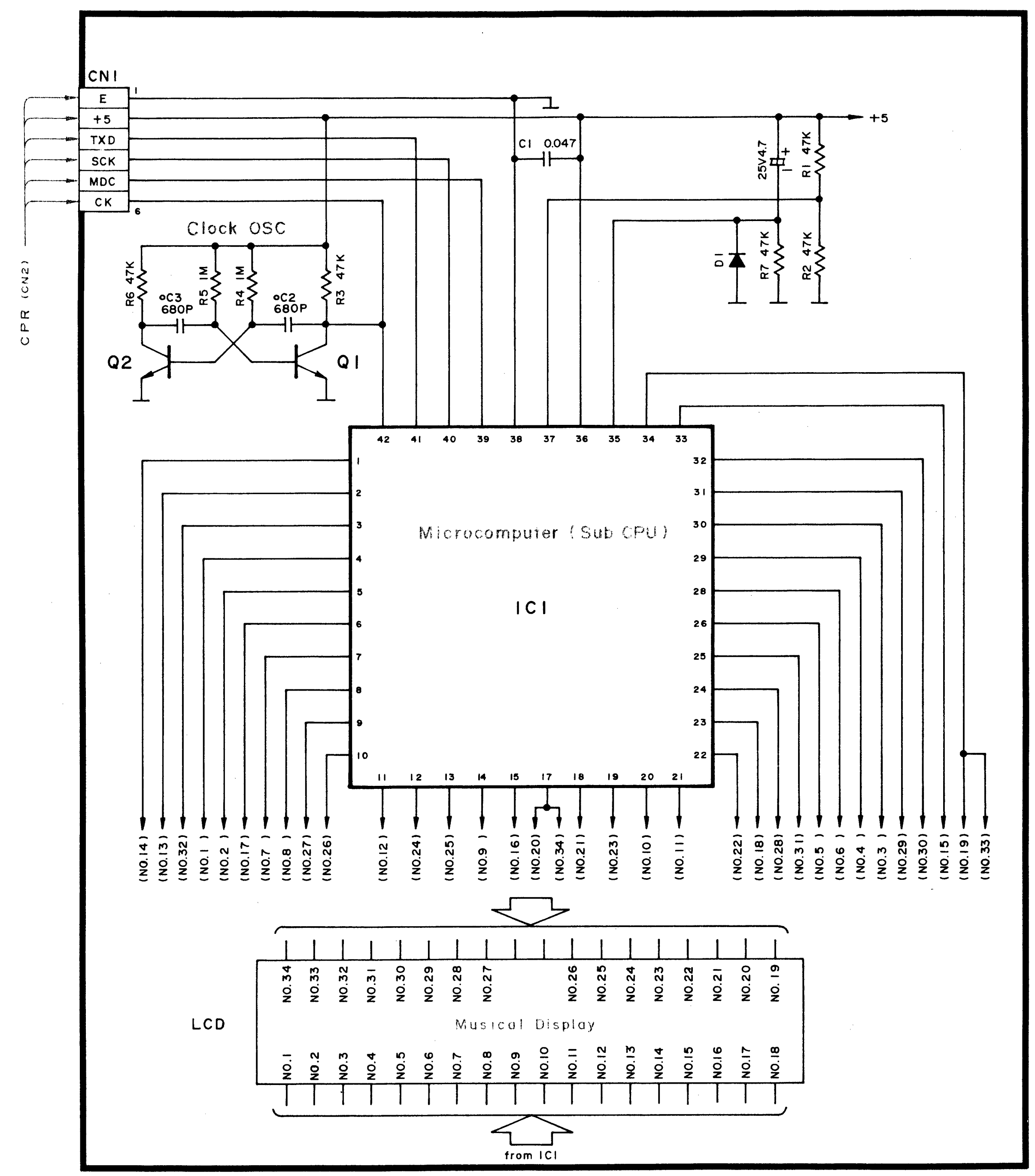
* Upper Keyboard **SXPG126711**
* Lower Keyboard **SXPG126721**


SSPG6001A
SSPG6001A
SSPG6001A
SSPG6001A
SSPG7001A
F F# G G# A A# B C C# D D# E F F# G G# A A# B C C# D D# E F F# G G# A A# B C
D16
D17 D18 D19 D20 D21 D22 D23
D24 D25 D26 D27 D28
D29 D30 D31 D32 D33
D34 D35 D36 D37
D38 D39 D40 D41 D42 D43 D44
JP3 For LKB
JP1 For UKB
JP4
CN1
IC1
JP6 JP7 JP8 JP9

SXPG11701


E F F# G G# A A# B 1P C2
D5 D6 D7 D8 D9 D10 D11 D12 D14 D13 D15
CN2
COM1
FSW
3
1

MD MUSICAL DISPLAY CIRCUIT

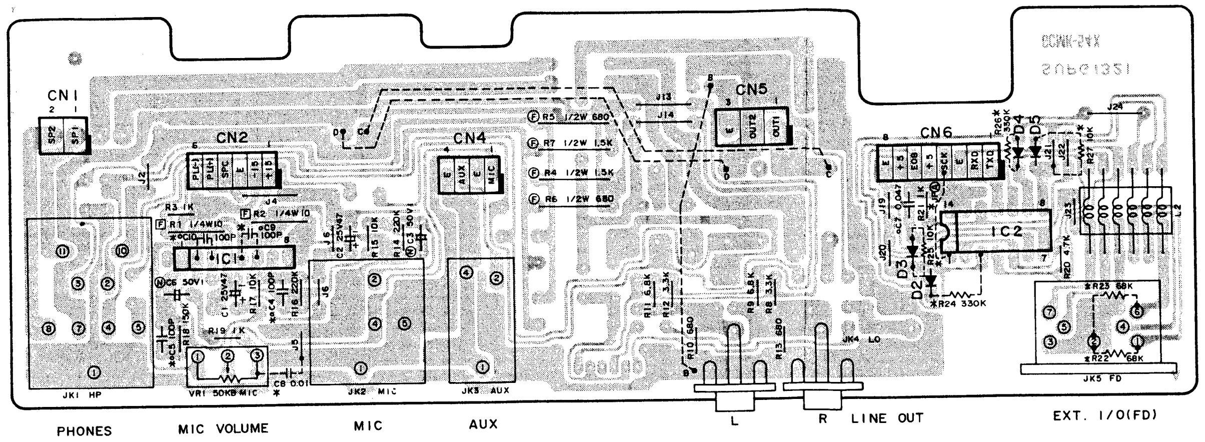

CN1
E
+5
TXD
SCK
MDC
CK
CPR (CN2)
Clock OSC
R6 47K
C3 680P
R5 1M
R4 1M
C2 680P
R3 47K
Q2
Q1
C1 0.047
25V4.7
R1 47K
D1
R7 47K
R2 47K
+5
Microcomputer (Sub CPU)
IC1
LCD
Musical Display
from IC1

NOTES:
- TRANSISTORS
  Q1, 2: 2SC2320LFG
- DIODE
  D1: MA165TA5

JACK 1 JACK 1 CIRCUIT BOARD

∗ Products for [EZ] SXPG132141

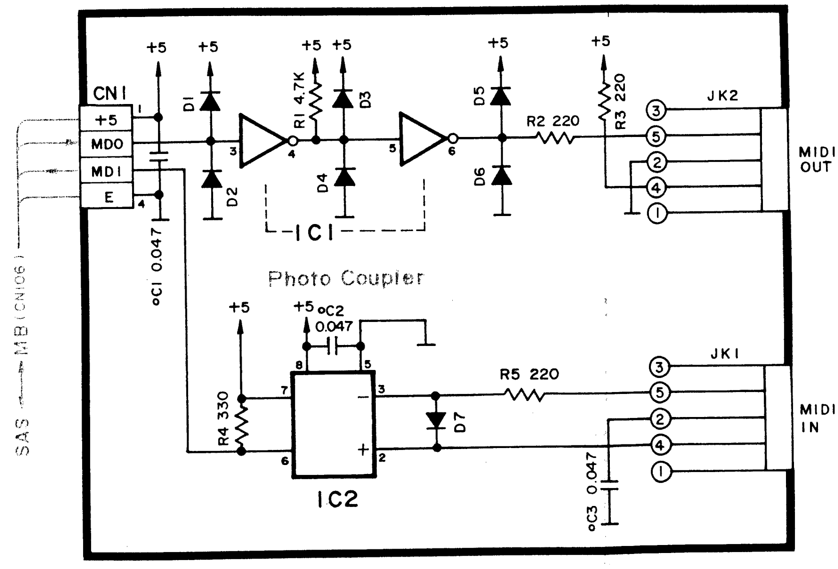
∗ Other areas SXPG132121


CN1
CN2
CN4
CN5
CN6
IC1
IC2
JK1 HP
VR1 50KB MIC
JK2 MIC
JK3 AUX
JK4 LO
JK5 FD
PHONES
MIC VOLUME
MIC
AUX
L
R
LINE OUT
EXT. I/O(FD)

∗ P.C.B. comparison chart by area.

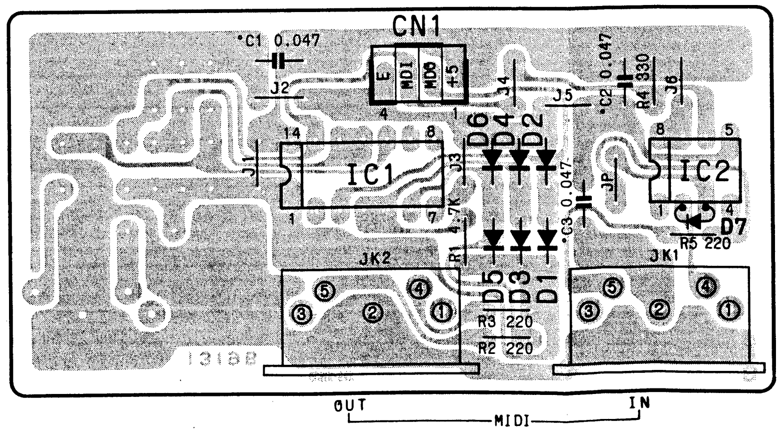
Area	P.C.B. No.	R22, R23, C4, C5	R24~27, C8~10, JPⒶ
EZ	SXPG132141	×	○
Others	SXPG132121	○	×

JACK 2 JACK 2 CIRCUIT

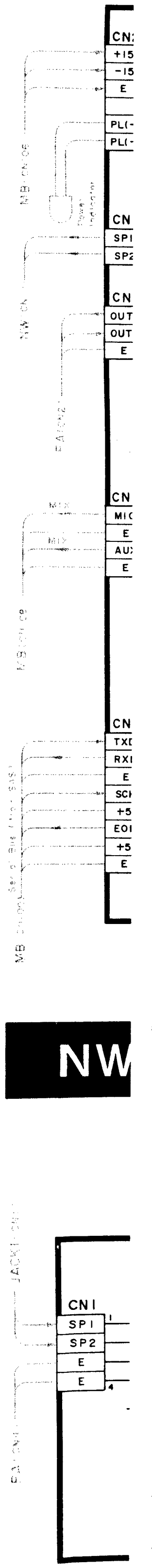

CN1
+5
MDO
MDI
E
SAG —MB(CN106)
C1 0.047
+5
D1
D2
R1 4.7K
D3
D4
IC1
D5
D6
R2 220
R3 220
JK2
MIDI OUT
Photo Coupler
C2 0.047
R4 330
IC2
D7
R5 220
C3 0.047
JK1
MIDI IN

NOTES:
- IC'S
  IC1: SVIGM74LS05
  IC2: SVIGTLP552
- DIODES
  D1~7: MA165TA5

SXPG131911B


CN1
E
MDI
MDO
+5
C1 0.047
C2 0.047
R4 330
IC1
IC2
D1
D2
D3
D4
D5
D6
D7
R1 4.7K
C3 0.047
R5 220
R3 220
R2 220
JK2
JK1
OUT
MIDI
IN

JACK 1

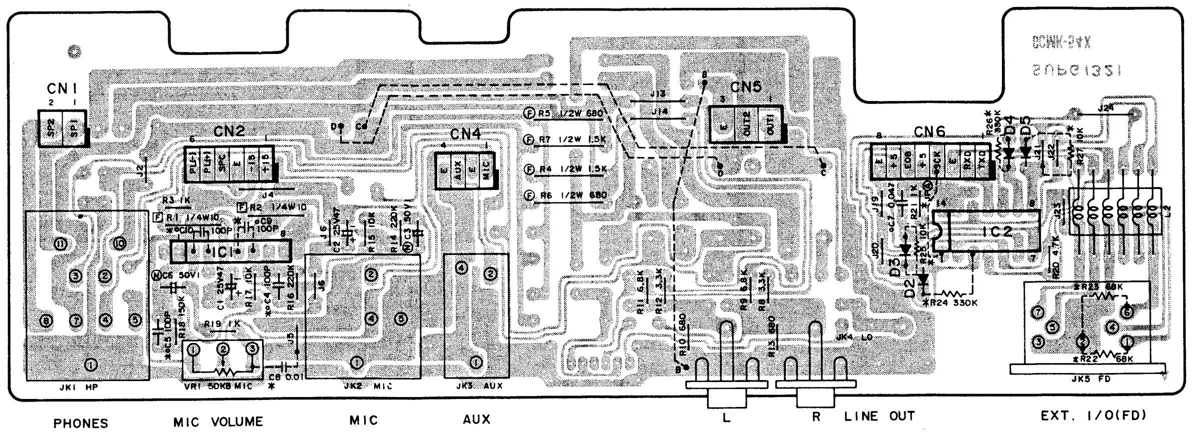


NW

JACK 1 JACK 1 CIRCUIT BOARD

* Products for [EZ] **SXPG132141**

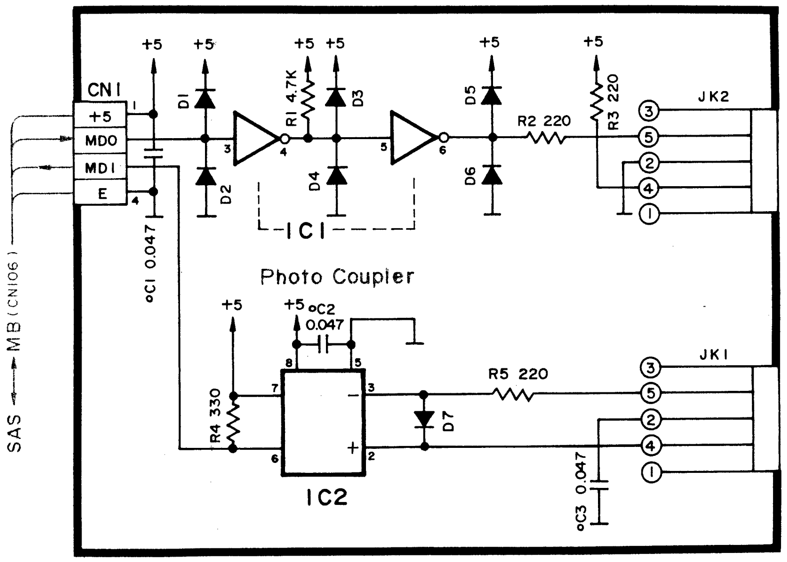
* Other areas **SXPG132121**


CN1
CN2
CN4
CN5
CN6
IC1
IC2
JK1 HP
VR1 50KB MIC
JK2 MIC
JK3 AUX
JK4 LO
JK5 FD
PHONES
MIC VOLUME
MIC
AUX
L
R
LINE OUT
EXT. I/O(FD)

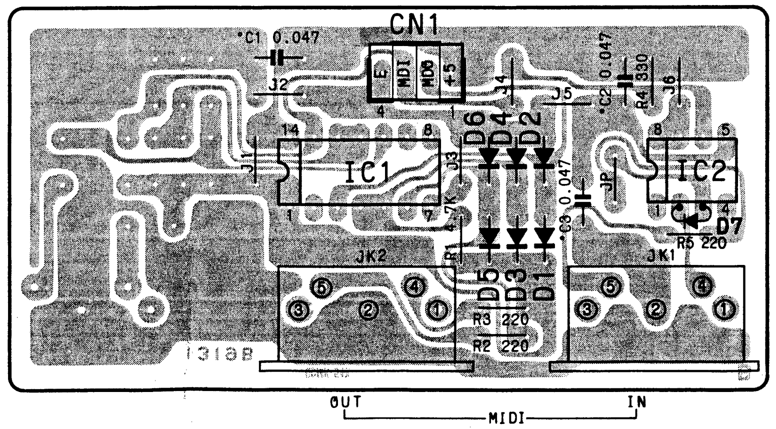
* **P.C.B. comparison chart by area.**

Area	P.C.B. No.	R22, R23, C4, C5	R24~27, C8~10, JPⓐ
EZ	SXPG132141	×	○
Others	SXPG132121	○	×

JACK 2 JACK 2 CIRCUIT

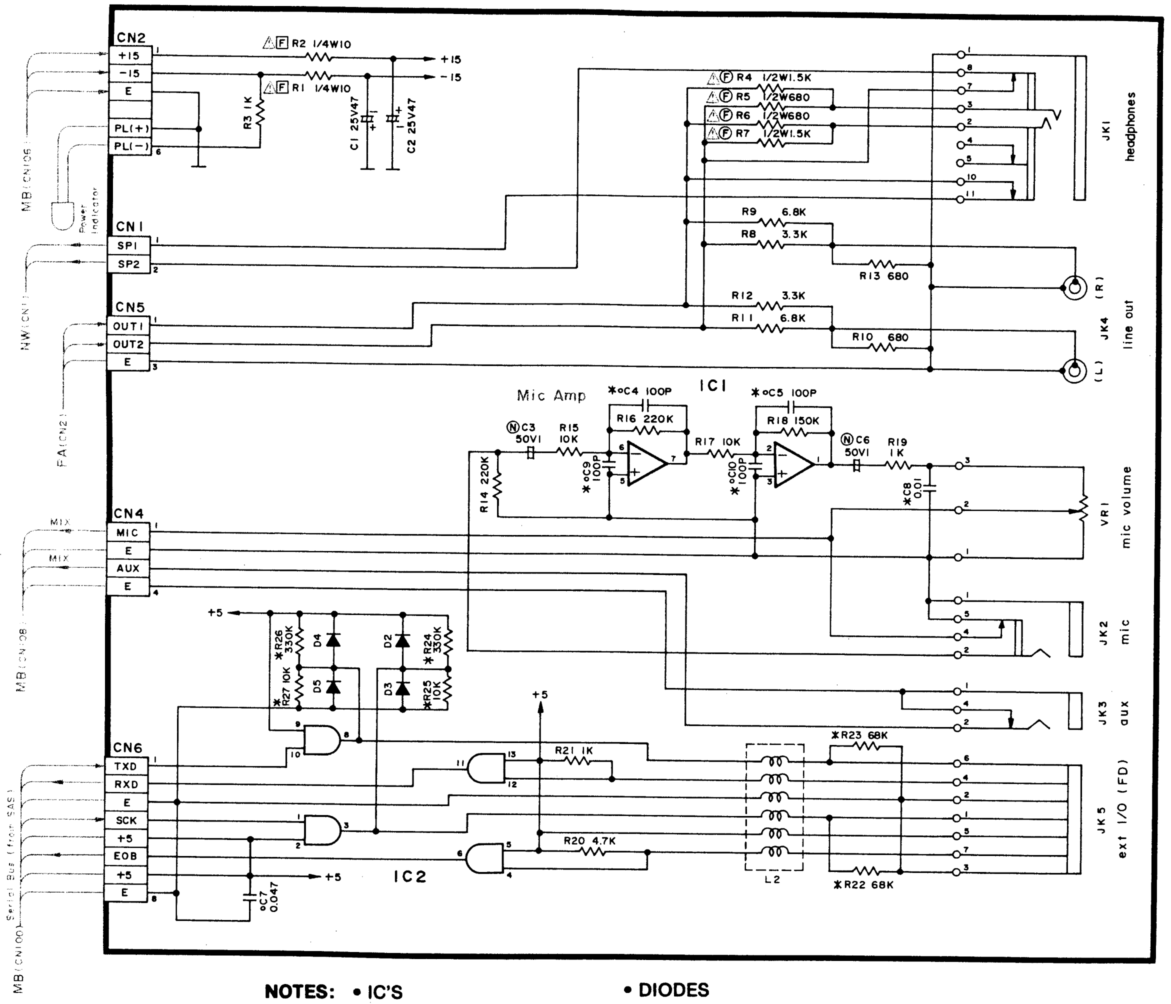

CN1
+5
MDO
MDI
E
SAS ← → MB(CN106)
IC1
Photo Coupler
IC2
JK2
MIDI OUT
JK1
MIDI IN
R1 4.7K
R2 220
R3 220
R4 330
R5 220
C1 0.047
C2 0.047
C3 0.047
D1
D2
D3
D4
D5
D6
D7

SXPG131911B


CN1
IC1
IC2
JK2
JK1
OUT
MIDI
IN

NOTES:
- IC'S
  - IC1: SVIGM74LS05
  - IC2: SVIGTLP552
- DIODES
  - D1~7: MA165TA5

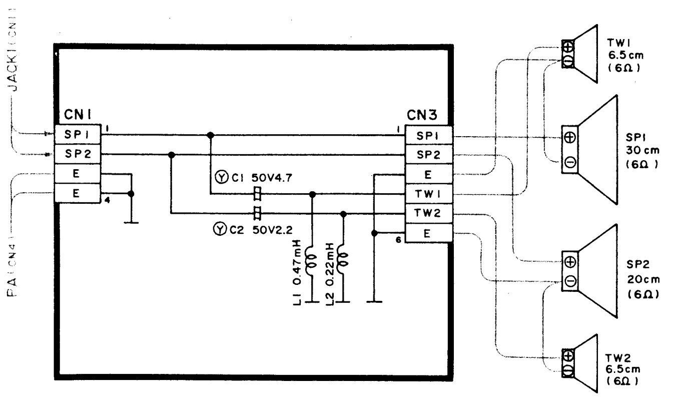
JACK 1 JACK 1 CIRCUIT DIAGRAM

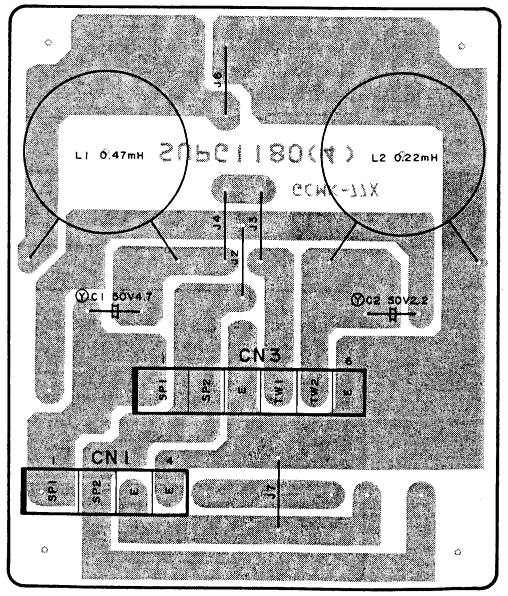

CN2
+15
−15
E
PL(+)
PL(−)
CN1
SP1
SP2
CN5
OUT1
OUT2
E
CN4
MIC
E
AUX
E
CN6
TXD
RXD
E
SCK
+5
EOB
+5
E
Mic Amp
IC1
IC2
JK1 headphones
JK4 line out
VR1 mic volume
JK2 mic
JK3 aux
JK5 ext I/O (FD)
L2

NOTES:
- IC'S
  - IC1: SVIGM5218L
  - IC2: SVIGM74LS09
- DIODES
  - D2~5: MA165TA5

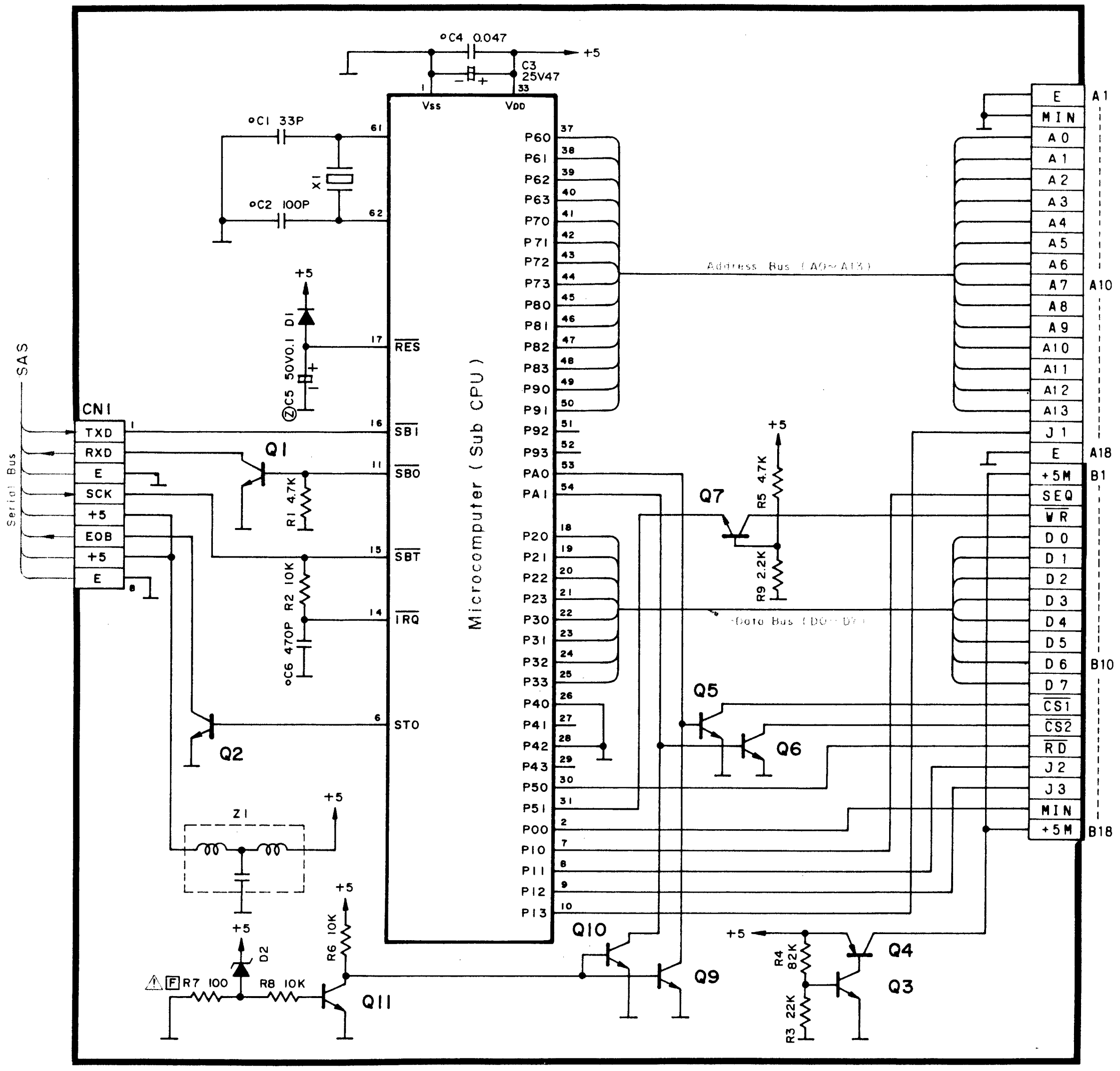
NW NETWORK CIRCUIT

SXPG118071


CN1
SP1
SP2
E
E
CN3
SP1
SP2
E
TW1
TW2
E
C1 50V4.7
C2 50V2.2
L1 0.47mH
L2 0.22mH
TW1 6.5cm (6Ω)
SP1 30cm (6Ω)
SP2 20cm (6Ω)
TW2 6.5cm (6Ω)


L1 0.47mH
L2 0.22mH
C1 50V4.7
C2 50V2.2
CN3
CN1

MPC MEMORY PACK CONTROL CIRCUIT DIAGRAM

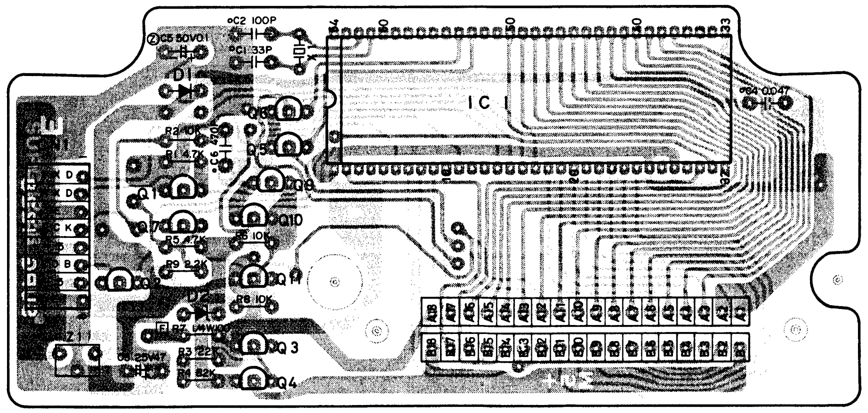

1
2
3
4
5
CN1
TXD
RXD
E
SCK
+5
EOB
SAS
Serial Bus
Microcomputer (Sub CPU)
Vss
VDD
RES
SBI
SBO
SBT
IRQ
STO
Address Bus (A9~A13)
Data Bus (D0~D7)
C1 33P
C2 100P
C3 25V47
C4 0.047
C5 50V0.1
C6 470P
X1
D1
D2
Z1
R1 4.7K
R2 10K
R3 22K
R4 82K
R5 4.7K
R6 10K
R7 100
R8 10K
R9 2.2K
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q9
Q10
Q11
P60
P61
P62
P63
P70
P71
P72
P73
P80
P81
P82
P83
P90
P91
P92
P93
PA0
PA1
P20
P21
P22
P23
P30
P31
P32
P33
P40
P41
P42
P43
P50
P51
P00
P10
P11
P12
P13
E
MIN
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
J1
+5M
SEQ
WR
D0
D1
D2
D3
D4
D5
D6
D7
CS1
CS2
RD
J2
J3
A1
A10
A18
B1
B10
B18

NOTES:
- IC
  IC1: MN15621PGB
- DIODES
  D1: MA165TA5
  D2: MA1036H
- TRANSISTORS
  Q1, 2, 7: 2SC1047C
  Q3, 5, 6, 9~11: 2SC2320LFG
  Q4: 2SA1015GR

MPC MEMORY PACK CONTROL CIRCUIT BOARD

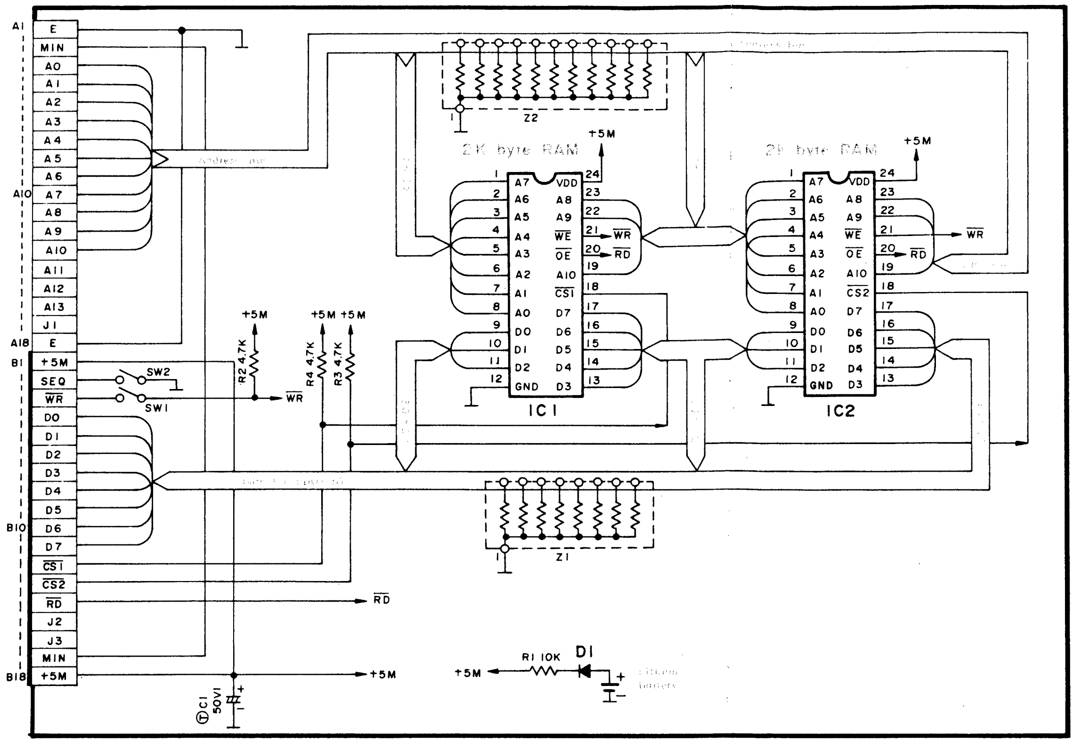
Circuit view on top of P.C.B

SXPG12281


C2 100P
C5 50V0.1
C1 33P
D1
IC1
C4 0.047
Q1
Q10
Q3
Q4
R1 4.7K
R9 2.2K
R6 10K
R8 10K
R7 100W
A18
A17
A16
A15
A14
A13
A12
A11
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1

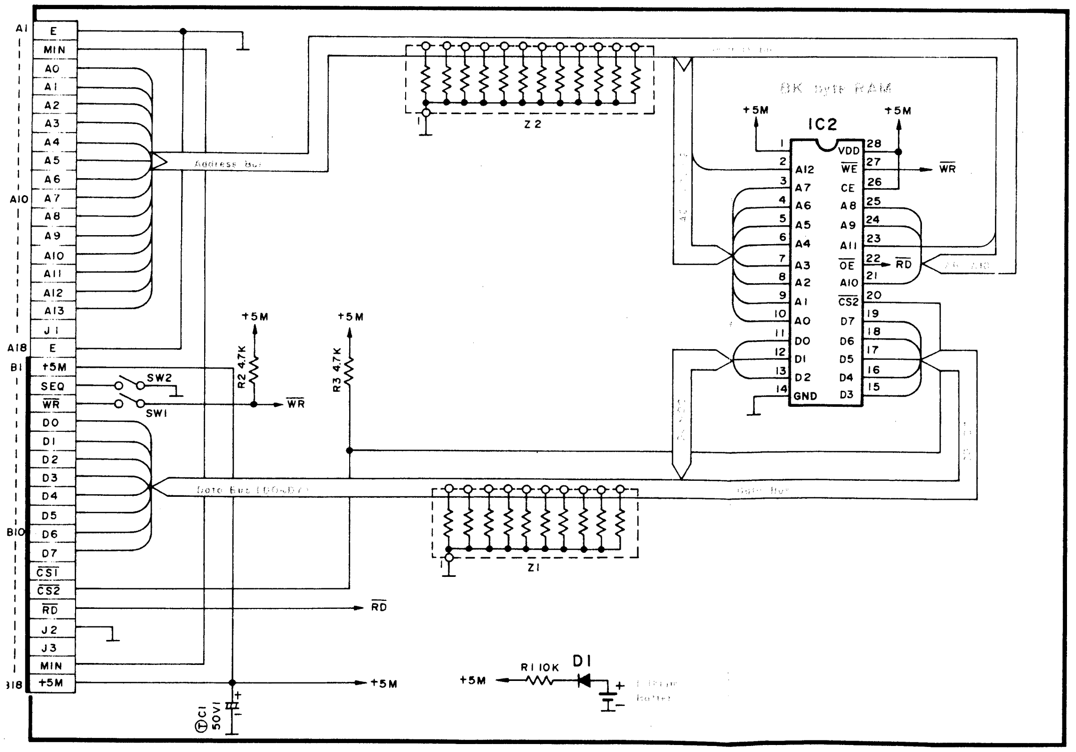
MP MEMORY PACK CIRCUIT DIAGRAM

SY-P2


6
7
8
9
10
E
MIN
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
J1
E
+5M
SEQ
WR
D0
D1
D2
D3
D4
D5
D6
D7
CS1
CS2
RD
J2
J3
MIN
+5M
A1
A10
A18
B1
B10
B18
Address bus
Data bus
2K byte RAM
2K byte RAM
IC1
IC2
Z1
Z2
SW1
SW2
R1 10K
R2 4.7K
R3 4.7K
R4 4.7K
C1 50V1
D1
+5M
WR
RD

NOTES:
- IC'S
  IC1, 2: SVIGM512820R
- DIODE
  D1: MA165TA5

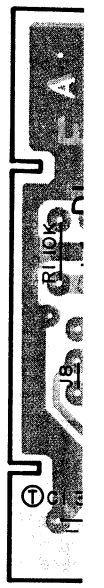
SY-P3


E
MIN
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
J1
E
+5M
SEQ
WR
D0
D1
D2
D3
D4
D5
D6
D7
CS1
CS2
RD
J2
J3
MIN
+5M
A1
A10
A18
B1
B10
B18
Address bus
Data bus (D0~D7)
8K byte RAM
IC2
Z1
Z2
SW1
SW2
R1 10K
R2 4.7K
R3 4.7K
C1 50V1
D1
+5M
WR
RD

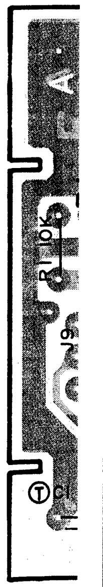
NOTES:
- IC
  IC1: SVIG6264LP15
- DIODE
  D1: MA165TA5

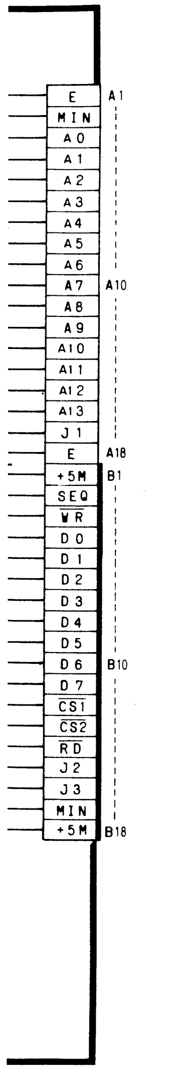
MP

SY



SY

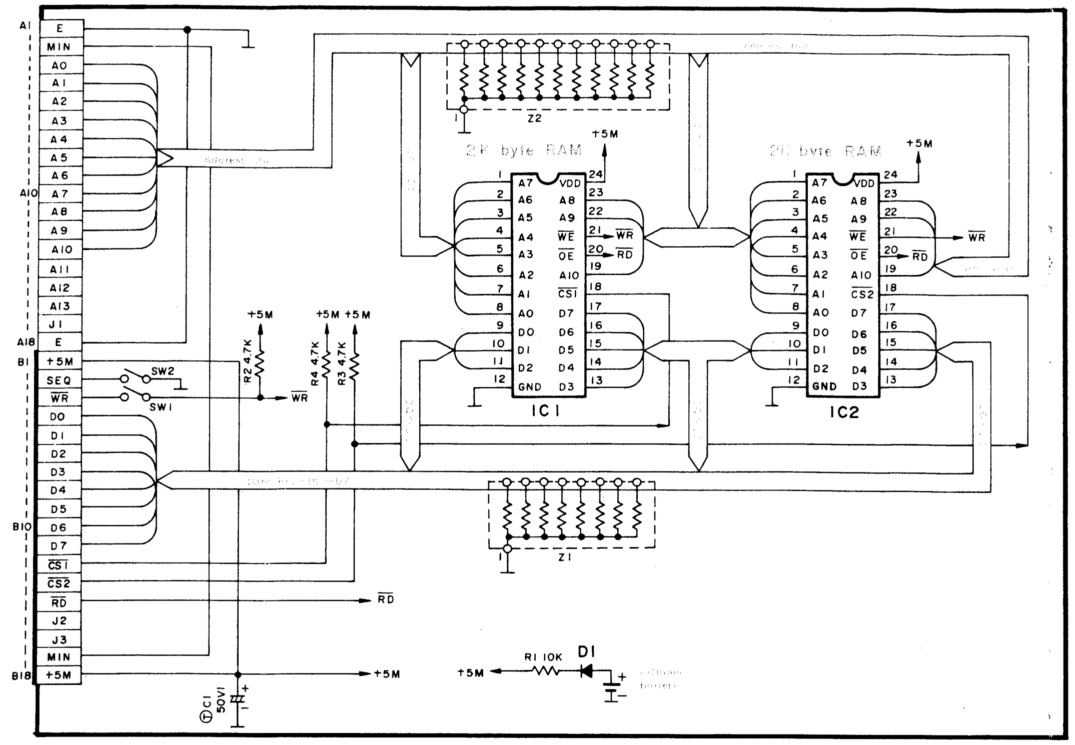



E
MIN
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
J1
E
+5M
SEQ
WR
D0
D1
D2
D3
D4
D5
D6
D7
CS1
CS2
RD
J2
J3
MIN
+5M
A1
A10
A18
B1
B10
B18

BOARD

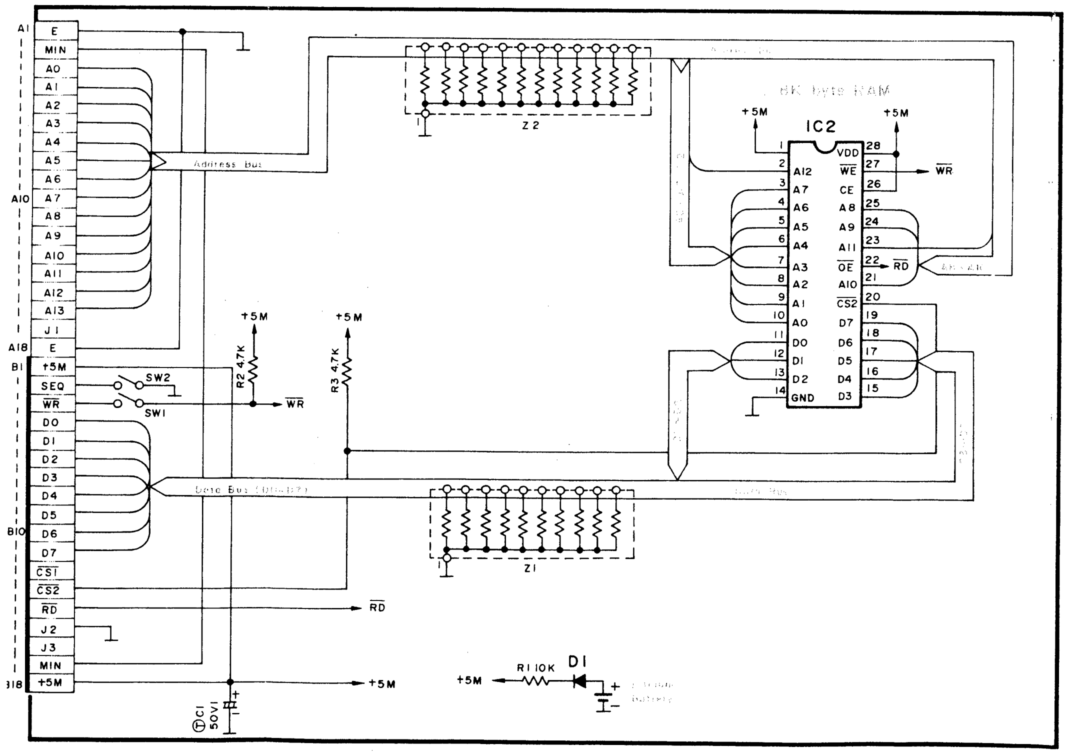
MP MEMORY PACK CIRCUIT DIAGRAM

SY-P2


A1
A10
A18
B1
B10
B18
E
MIN
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
J1
E
+5M
SEQ
WR
D0
D1
D2
D3
D4
D5
D6
D7
CS1
CS2
RD
J2
J3
MIN
+5M
Z2
Z1
2K byte RAM
IC1
IC2
+5M
SW2
SW1
R2 4.7K
R4 4.7K
R3 4.7K
WR
RD
Address bus
Data bus
C1 50V1
R1 10K
D1
Lithium battery
A7 A6 A5 A4 A3 A2 A1 A0 D0 D1 D2 GND
VDD A8 A9 WE OE A10 CS1 D7 D6 D5 D4 D3

NOTES:
- IC'S
  IC1, 2: SVIGM512820R
- DIODE
  D1: MA165TA5

SY-P3

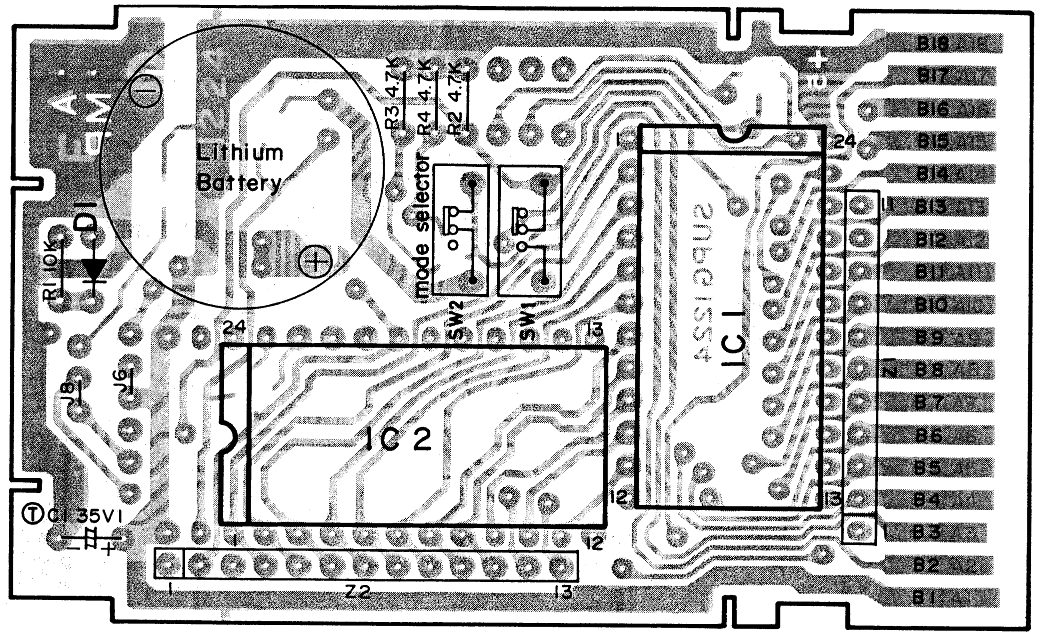

A1
A10
A18
B1
B10
B18
E
MIN
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
J1
E
+5M
SEQ
WR
D0
D1
D2
D3
D4
D5
D6
D7
CS1
CS2
RD
J2
J3
MIN
+5M
Z2
Z1
8K byte RAM
IC2
+5M
SW2
SW1
R2 4.7K
R3 4.7K
WR
RD
Address bus
Data bus
C1 50V1
R1 10K
D1
Lithium battery
A12 A7 A6 A5 A4 A3 A2 A1 A0 D0 D1 D2 GND
VDD WE CE A8 A9 A11 OE A10 CS2 D7 D6 D5 D4 D3

NOTES:
- IC
  IC1: SVIG6264LP15
- DIODE
  D1: MA165TA5

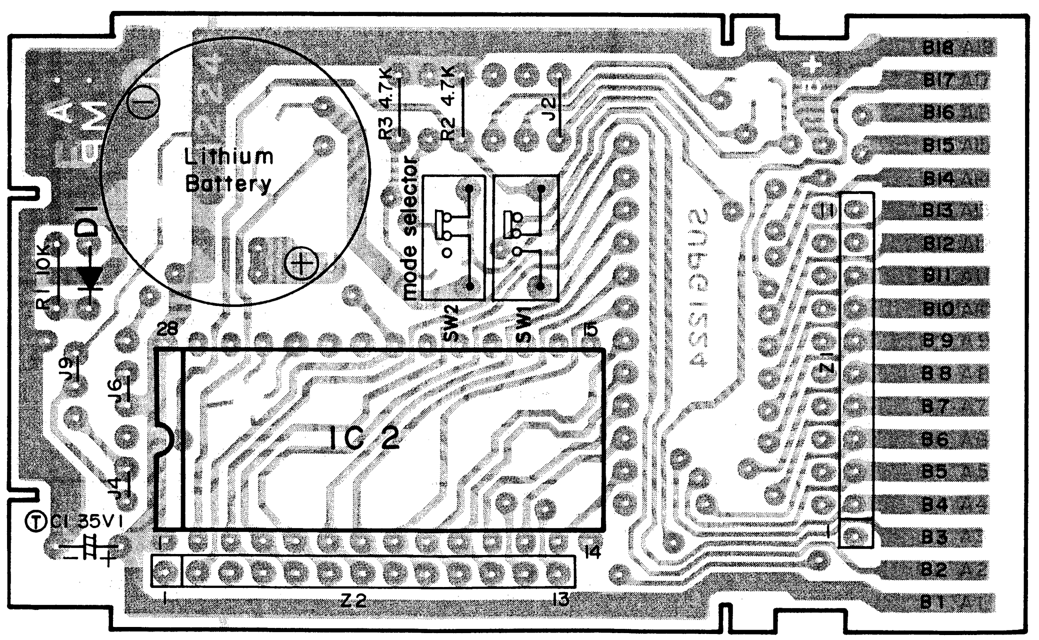
MP MEMORY PACK CIRCUIT BOARD

Circuit view on top of P.C.B

SY-P2 **SXPG12241**

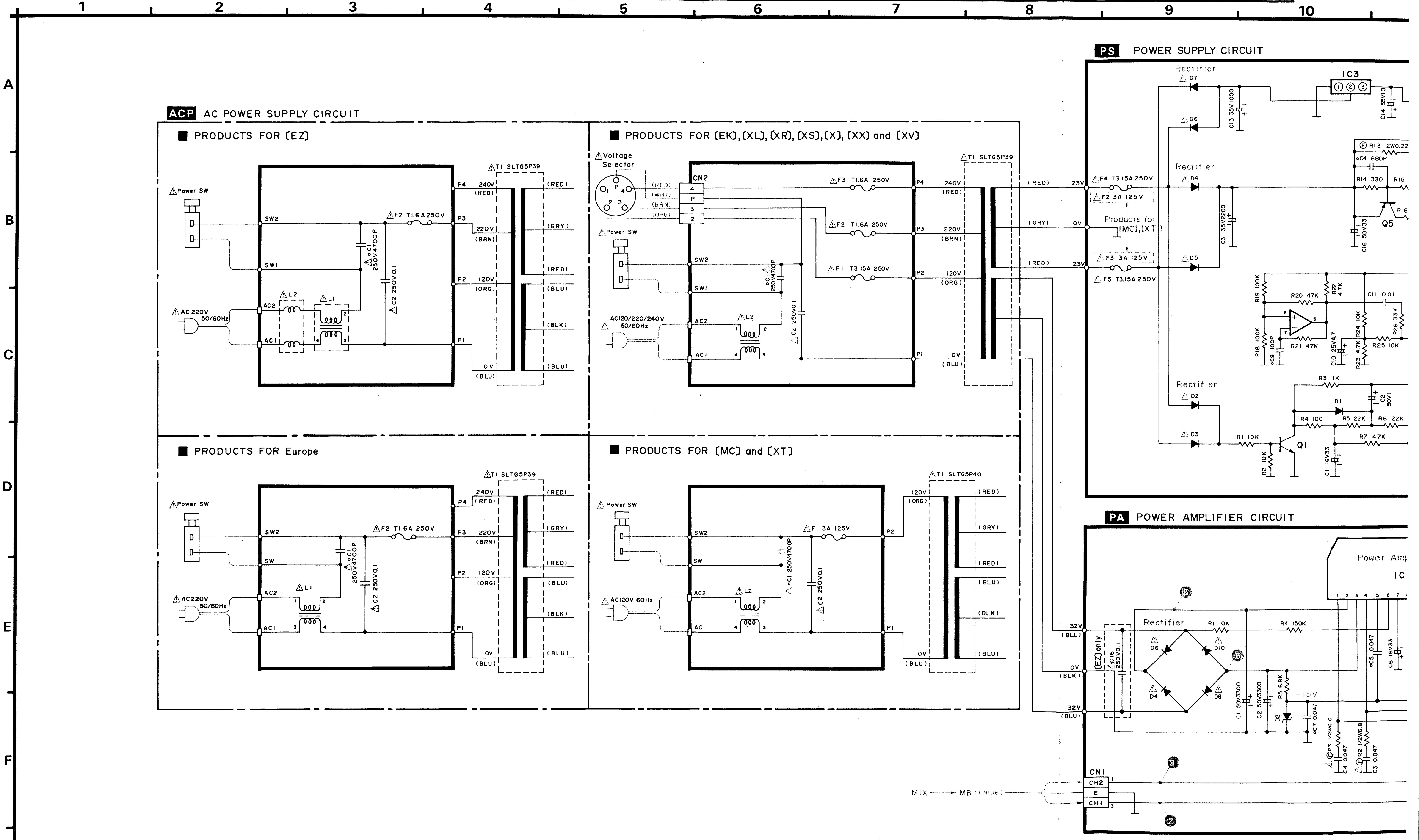

Lithium Battery
D1
R1 10K
R3 4.7K
R4 4.7K
R2 4.7K
mode selector
SW2
SW1
IC 1
IC 2
J8
J6
Z1
Z2
C1 35V1
24
13
12
1
B18
B17
B16
B15
B14
B13
B12
B11
B10
B9
B8
B7
B6
B5
B4
B3
B2
B1

SY-P3 **SXPG12242**

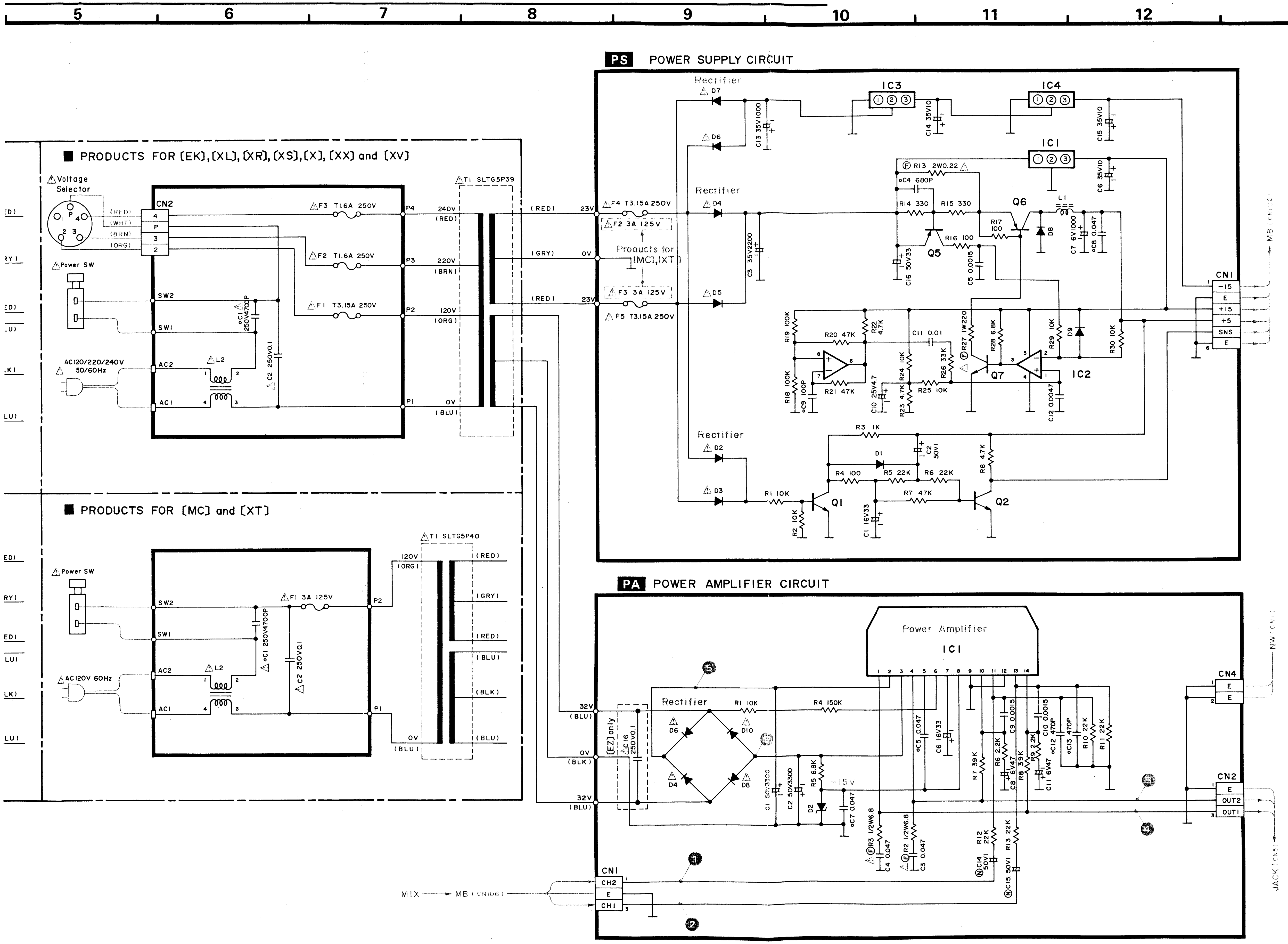

Lithium Battery
D1
R1 10K
R3 4.7K
R2 4.7K
J2
mode selector
SW2
SW1
IC 2
J9
J6
J4
Z1
Z2
C1 35V1
28
15
14
13
1
B18
B17
B16
B15
B14
B13
B12
B11
B10
B9
B8
B7
B6
B5
B4
B3
B2
B1

ACP **PS** **PA**

AC POWER SUPPLY, POWER SUPPLY, POWER AMPLIFIER CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
ACP AC POWER SUPPLY CIRCUIT
PRODUCTS FOR [EZ]
Power SW
SW2
SW1
AC2
AC1
AC 220V 50/60Hz
L2
L1
F2 T1.6A 250V
C1 250V4700P
C2 250V0.1
T1 SLTG5P39
P4 240V (RED)
P3 220V (BRN)
P2 120V (ORG)
P1
0V (BLU)
(RED)
(GRY)
(BLU)
(BLK)
PRODUCTS FOR [EK], [XL], [XR], [XS], [X], [XX] and [XV]
Voltage Selector
CN2
(WHT)
F3 T1.6A 250V
F2 T1.6A 250V
F1 T3.15A 250V
AC120/220/240V 50/60Hz
PRODUCTS FOR Europe
AC220V 50/60Hz
PRODUCTS FOR [MC] and [XT]
F1 3A 125V
AC120V 60Hz
T1 SLTG5P40
120V (ORG)
PS POWER SUPPLY CIRCUIT
23V
0V
F4 T3.15A 250V
F2 3A 125V
Products for [MC], [XT]
F3 3A 125V
F5 T3.15A 250V
Rectifier
D7
D6
D4
D5
D2
D3
IC3
C13 35V1000
C14 35V10
C3 35V2200
C16 50V33
R13 2W0.22
C4 680P
R14 330
R15
R16
Q5
R19 100K
R20 47K
R22 4.7K
C11 0.01
R18 100K
C9 100P
R21 47K
R24 10K
R26 33K
C10 25V4.7
R23 4.7K
R25 10K
R3 1K
C2 50V1
D1
R4 100
R5 22K
R6 22K
R1 10K
R2 10K
Q1
C1 16V33
R7 47K
PA POWER AMPLIFIER CIRCUIT
Power Amp
IC
32V (BLU)
0V (BLK)
[EZ] only
C16 250V0.1
Rectifier
R1 10K
R4 150K
D6
D10
D4
D8
C1 50V3300
C2 50V3300
R5 6.8K
−15V
D2
C7 0.047
C5 0.047
C6 16V33
R3 1/2W6.8
C4 0.047
R2 1/2W6.8
C3 0.047
CN1
CH2
E
CH1
MIX → MB (CN106)

ER SUPPLY, POWER AMPLIFIER CIRCUIT DIAGRAM


5
6
7
8
9
10
11
12
13
14
PS POWER SUPPLY CIRCUIT
■ PRODUCTS FOR (EK),(XL),(XR),(XS),(X),(XX) and (XV)
Voltage Selector
P
(RED)
(WHT)
(BRN)
(ORG)
CN2
4
P
3
2
Power SW
SW2
SW1
AC120/220/240V
50/60Hz
AC2
AC1
L2
oC1 250V4700P
C2 250V0.1
F3 T1.6A 250V
F2 T1.6A 250V
F1 T3.15A 250V
P4
P3
P2
P1
240V
(RED)
220V
(BRN)
120V
(ORG)
0V
(BLU)
T1 SLTG5P39
(RED)
(GRY)
(RED)
23V
0V
23V
F4 T3.15A 250V
F2 3A 125V
Products for [MC],[XT]
F3 3A 125V
F5 T3.15A 250V
Rectifier
D7
D6
C13 35V1000
IC3
IC4
C14 35V10
C15 35V10
IC1
C6 35V10
F R13 2W0.22
oC4 680P
R14 330
R15 330
Q6
L1
R17 100
D8
C7 6V1000
oC8 0.047
R16 100
Q5
C16 50V33
C5 0.0015
Rectifier
D4
D5
C3 35V2200
CN1
-15
E
+15
+5
SNS
E
MB (CN102)
R19 100K
R20 47K
R22 4.7K
C11 0.01
R27 1W220
R28 6.8K
R29 10K
D9
R30 10K
R18 100K
oC9 100P
R21 47K
C10 25V4.7
R24 10K
R23 4.7K
R25 10K
R26 33K
Q7
IC2
C12 0.0047
Rectifier
D2
D3
R3 1K
D1
C2 50V1
R8 4.7K
R4 100
R5 22K
R6 22K
R7 47K
R1 10K
R2 10K
Q1
Q2
C1 16V33
■ PRODUCTS FOR (MC) and (XT)
T1 SLTG5P40
Power SW
SW2
SW1
AC120V 60Hz
AC2
AC1
L2
oC1 250V4700P
C2 250V0.1
F1 3A 125V
P2
P1
120V
(ORG)
0V
(BLU)
(RED)
(GRY)
(RED)
(BLU)
(BLK)
(BLU)
PA POWER AMPLIFIER CIRCUIT
32V
(BLU)
0V
(BLK)
32V
(BLU)
[EZ] only
C16 250V0.1
Rectifier
R1 10K
R4 150K
D6
D10
D4
D8
C1 50V3300
C2 50V3300
R5 6.8K
-15V
D2
oC7 0.047
Power Amplifier
IC1
1 2 3 4 5 6 7 8 9 10 11 12 13 14
oC5 0.047
C6 16V33
R7 39K
R6 2.2K
C8 6V47
C9 0.0015
R8 39K
R9 2.2K
C11 6V47
C10 0.0015
oC12 470P
oC13 470P
R10 22K
R11 22K
F R3 1/2W6.8
C4 0.047
F R2 1/2W6.8
C3 0.047
R12 22K
N C14 50V1
R13 22K
N C15 50V1
CN4
E
E
NW (CN1)
CN2
E
OUT2
OUT1
JACK (CN5)
CN1
CH2
E
CH1
MIX
MB (CN106)
①
②
③
④
⑤
⑥

PS

NOTES:

- IC'S

IC1:	AN7815
IC2:	SVIGM51207L
IC3:	AN7924F
IC4:	AN7915F

- TRANSISTORS

Q1, 2, 7:	2SC2320LFG
Q5:	2SA933STRS
Q6:	2SB953A

- DIODES

D1, 9:	MA165TA5
D2, 3, 6, 7:	SVDGSM1A02LF
D4, 5:	SVDS2V20
D8:	SVDGERC9102

- FUSES

F2, 3 MC XT:	XBA1F30NU14
F4, 5:	XBA2C31TB0

PA

NOTES:

- IC

IC1:	SVI3102

- DIODES

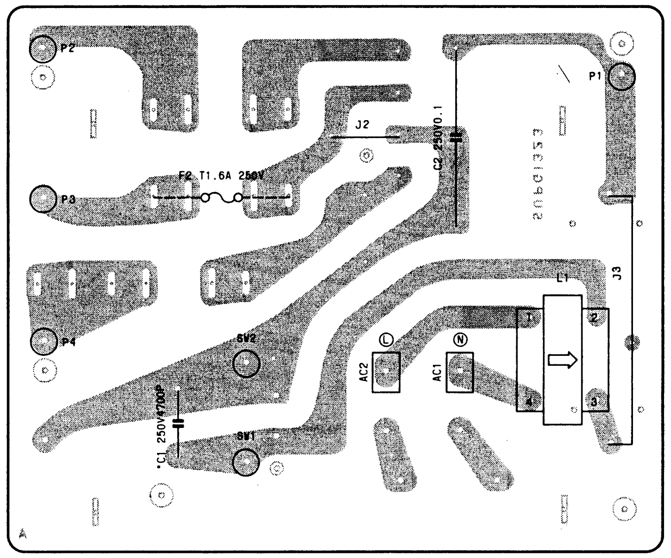
D2:	MA4150M
D4, 6, 8, 10:	SVDS3V20

ACP PS PA AC POWER SUPPLY, POWER SUPPLY, POWER AMPLIFIER CIRCUIT BOARD

■ AC POWER SUPPLY CIRCUIT BOARD

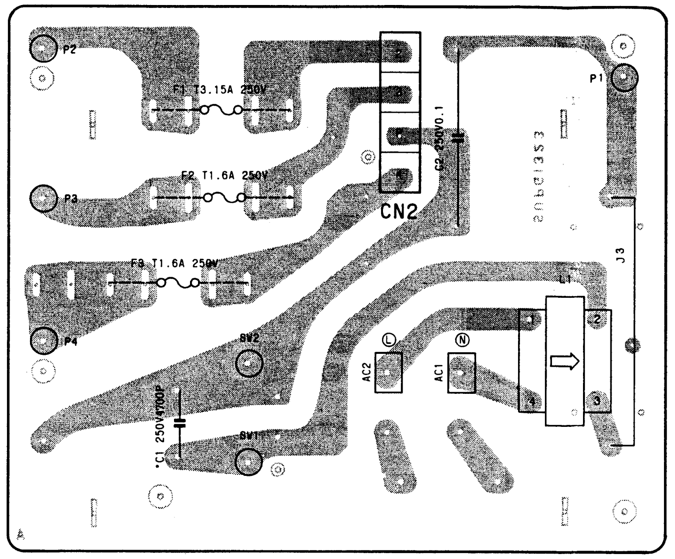
• Products for (EN), (EI), (EH), (EB), (EF), (EW), (EL), (EP)

SXPG132311


P2
P1
P3
P4
J2
J3
F2 T1.6A 250V
C2 250V0.1
L1
SV2
SV1
AC2
AC1
*C1 250V4700P
A

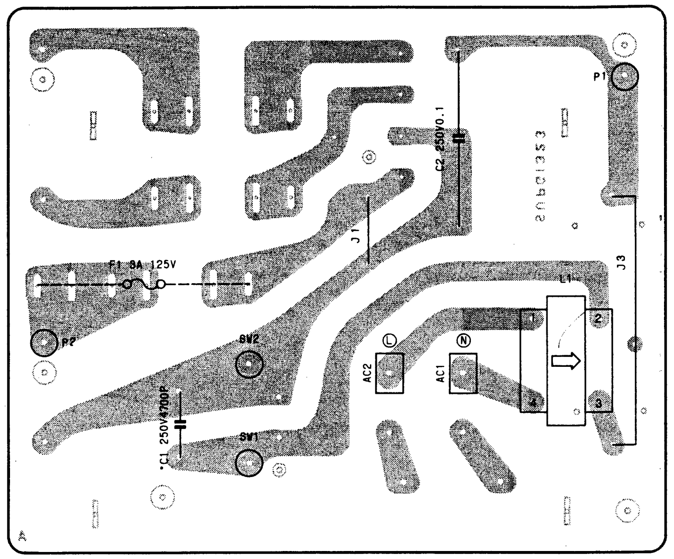
• Products for (EK), (XL), (XR), (XS), (X), (XV), (XX)

SXPG132321


P2
P1
P3
P4
F3 T3.15A 250V
F2 T1.6A 250V
F3 T1.6A 250V
CN2
C2 250V0.1
J3
L1
SV2
SV1
AC2
AC1
*C1 250V4700P
A

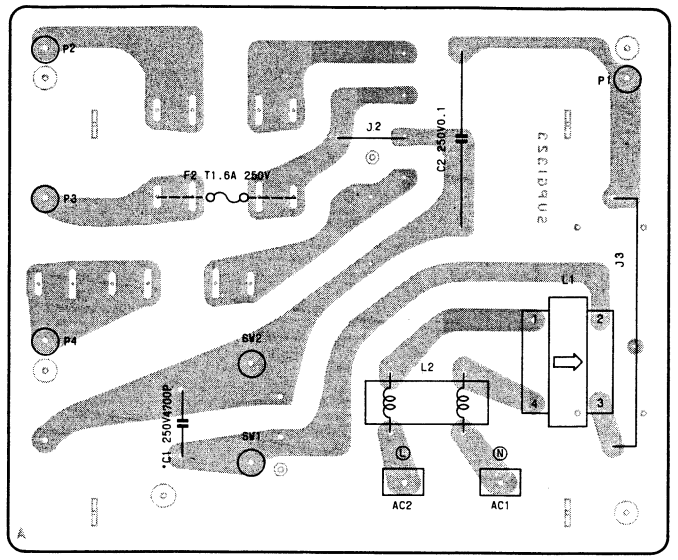
• Products for (MC), (XT)

SXPG132331


P2
P1
P2
F1 3A 125V
J1
C2 250V0.1
J3
L1
SV2
SV1
AC2
AC1
C1 250V4700P
A

• Products for (EZ)

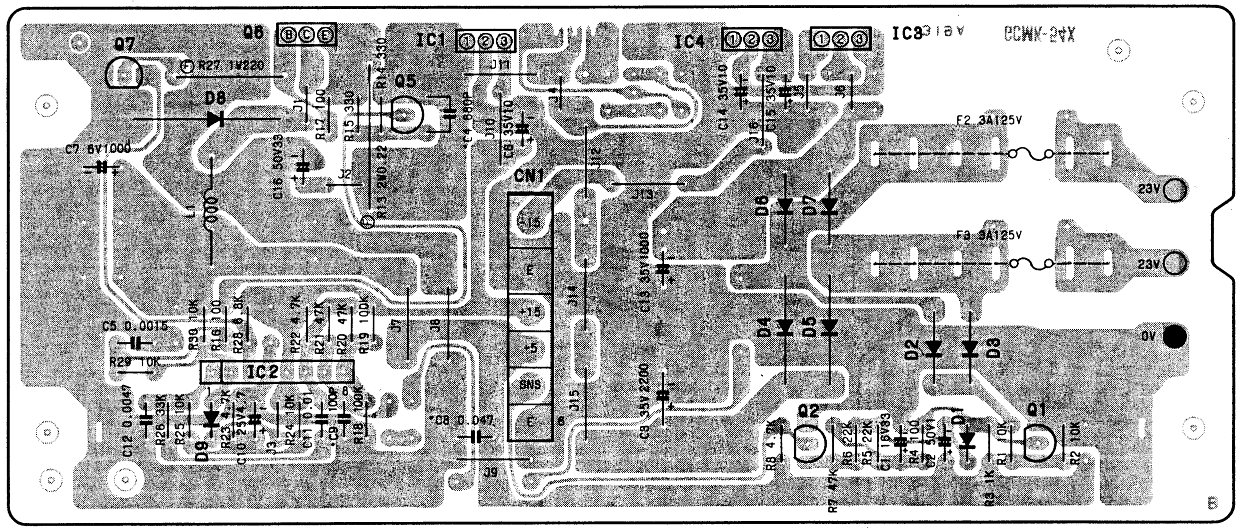
SXPG132351


P2
P1
P3
P4
J2
J3
F2 T1.6A 250V
C2 250V0.1
L1
L2
SV2
SV1
AC2
AC1
*C1 250V4700P
A

■ POWER SUPPLY CIRCUIT BOARD

• Products for (MC), (XT)

SXPG1319121A

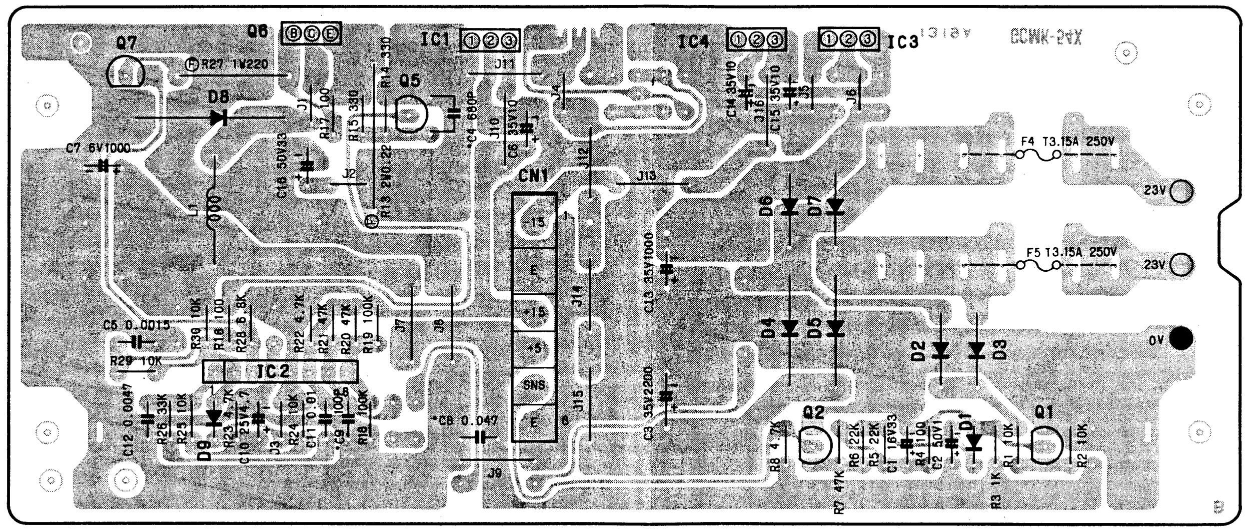

Q7
Q6
IC1
IC4
IC3
Q5
D8
R27 1W220
C7 6V1000
F2 3A125V
F3 3A125V
CN1
23V
23V
0V
D6
D7
D4
D5
D2
D3
C5 0.0015
R29 10K
IC2
C8 0.047
Q2
Q1
D9
D1
J9
B

• Products for (EZ)

SXPG131951A

• Other areas

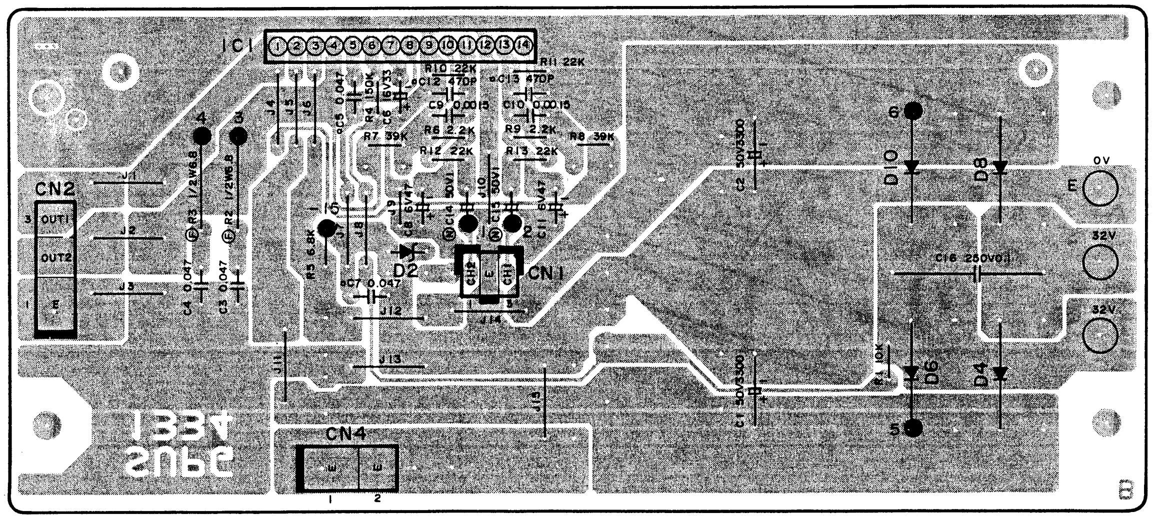
SXPG131971A


Q7
Q6
IC1
IC4
IC3
Q5
D8
R27 1W220
C7 6V1000
F4 T3.15A 250V
F5 T3.15A 250V
CN1
23V
23V
0V
D6
D7
D4
D5
D2
D3
C5 0.0015
R29 10K
IC2
C8 0.047
Q2
Q1
D9
D1
J9
B

■ POWER AMPLIFIER CIRCUIT BOARD

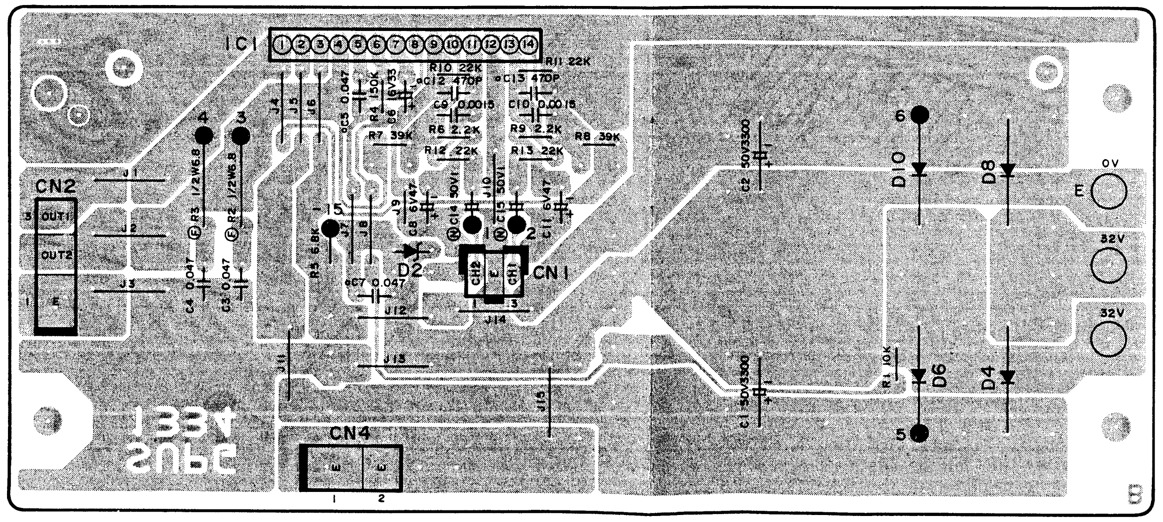
• Products for (EZ)

SXPG133441

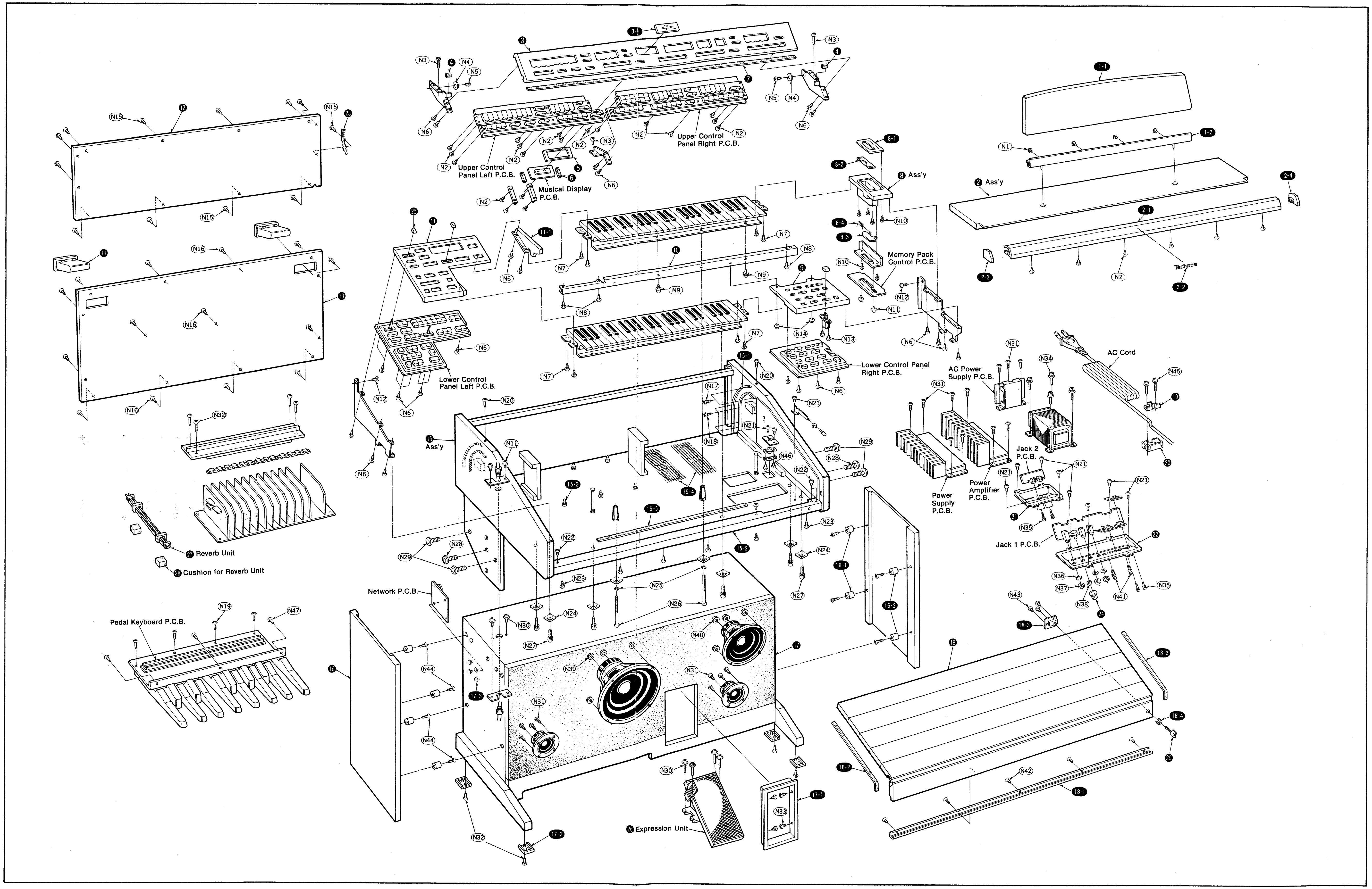

IC1
①②③④⑤⑥⑦⑧⑨⑩⑪⑫⑬⑭
4
3
6
5
1
2
CN2
OUT1
OUT2
D2
CN1
D10
D8
D6
D4
C16 250V0.1
C2 50V3300
C1 50V3300
0V
E
32V
32V
CN4
1334
SUPC
B

• Other areas

SXPG133411


IC1
①②③④⑤⑥⑦⑧⑨⑩⑪⑫⑬⑭
4
3
6
5
1
2
CN2
OUT1
OUT2
D2
CN1
D10
D8
D6
D4
C2 50V3300
C1 50V3300
0V
E
32V
32V
CN4
1334
SUPC
B

EXPLODED VIEWS OF CABINET


3-1
3
N3
4
N4
N5
N6
7
N2
Upper Control Panel Left P.C.B.
5
6
Musical Display P.C.B.
Upper Control Panel Right P.C.B.
1-1
1-2
N1
2 Ass'y
2-4
2-1
2-3
2-2
Technics
8-1
8-2
8 Ass'y
8-4
8-3
Memory Pack Control P.C.B.
N10
N11
N12
12
N15
23
13
14
N16
11
11-1
25
10
9
N7
N8
N9
N13
N14
Lower Control Panel Left P.C.B.
Lower Control Panel Right P.C.B.
AC Power Supply P.C.B.
AC Cord
N31
N34
N45
19
20
N32
27 Reverb Unit
28 Cushion for Reverb Unit
15 Ass'y
15-1
15-2
15-3
15-4
15-5
N17
N18
N20
N21
N22
N23
N24
N25
N26
N27
N28
N29
N46
Jack 2 P.C.B.
Power Amplifier P.C.B.
Power Supply P.C.B.
21
N35
Jack 1 P.C.B.
22
N36
N37
N38
N41
24
Network P.C.B.
Pedal Keyboard P.C.B.
N19
N47
16
16-1
16-2
17
17-1
17-2
17-3
N30
N33
N39
N40
N44
26 Expression Unit
18
18-1
18-2
18-3
18-4
29
N42
N43

REPLACEMENT PARTS LIST......Mechanical Parts

Notes:

1. ○ mark are new parts.
2. For part No. with area mark, check the area when placing an order.
3. Cabinet Colour
   - SX-EX60-K .... Black face
   - SX-EX60 .... Woody face

■ MECHANICAL PARTS

• SX-EX60-K... Black face cabinet

	Ref. No.	Part No.	Description	Per/Set
		CABINET PARTS (SX-EX60-K)		
○	1-1	SKGG1B100A	Music Rack	1
	1-2	SGXG2290A	Ornament	1
	2	SKPG840A	Top Cover Ass'y	1
	2-1	SGXG2100A	Ornament	1
	2-2	SGBG100A	Technics Badge	1
	2-3	SHRG8270A	Cap, Left Side	1
	2-4	SHRG8280A	Cap, Right Side	1
○	3	SGWG1730A	Control Panel	1
○	3-1	SGKG2160A	Musical Display Panel	1
	4	SHSG1640A	Felt	2
○	5	SHGG8420A	Spacer for Musical	1
○	6	SHGG8410A	Spacer Display	2
	7	SHSG1890A	Felt	1
	8	SYWG5111D	Upper Right End Cover Panel	1
	8-1	SKEG1090D	Receptacle	1
	8-2	SKEG1100C	Slide Cover for Memory	1
	8-3	SKEG1111C	Dust Cover Pack	1
	8-4	SUSG300A	Spring	1
○	9	SGWG3150J	Lower Right End Cover Panel	1
	10	SGXG2140A	Ornament Panel, for Lower Keyboard	1
○	11	SYWG8130A	Left End Cover Panel	1
	11-1	SGEG180C	Ornament	1
○	12	SKZG7590A	Rear Board, Upper Side	1
○	13	SYUG1110A	Rear Board, Lower Side	1
	14	SKHG50A	Handle	2
○	15	SKMG1400A	Cabinet (Upper Unit)	1
○	15 EZ	SKMG1401A	Cabinet (Upper Unit), [EZ] only	1
	15-1	SKEG7340A	Sliding Cover Guide	2
	15-2	SGXG2120A	Front Panel	1
	15-3	SHRG9200A	P.C.B. Holder	6, 8 EZ
	15-4	SGMG180A	Net	2
	15-5	SHSG2870A	Felt	1
○	16	SKZGC700A	Side Panel	2
	16-1	SHGG9040A	Catch Rubber (brown)	4
	16-2	SHGG9040B	Catch Rubber (black)	4
○	17	SKMG1410A	Cabinet (Lower Unit)	1
	17-1	SGXG1100K	Ornament, for Expression	1
	17-2	SHRG2080C	Foot	4
	17-3	SHRG9200A	P.C.B. Holder	4
○	18	SKZG8330A	Sliding Cover	1
	18-1	SGXG414B	Ornament	1
	18-2	SHSG1550A	Felt	2
	18-3	SBEG30A	Lock	1
	18-4	SBEG40A	Staple	1
	19	SHRG1120A	AC Cord Clamper (A)	1
	20	SHRG1110A	AC Cord Clamper (B)	1
	21	SMKG2800A	Jack 2 Panel	1
	22	SMKG2670C	Jack 1 Panel	1
	23	SHRG1030A	Cord Band	1
	24	SBNG4010A	Knob, Mic Volume	1
	25	SBNG7031A	Knob, Tempo, Transpose	2
		BENCH		
○		SZ-CM94K		1

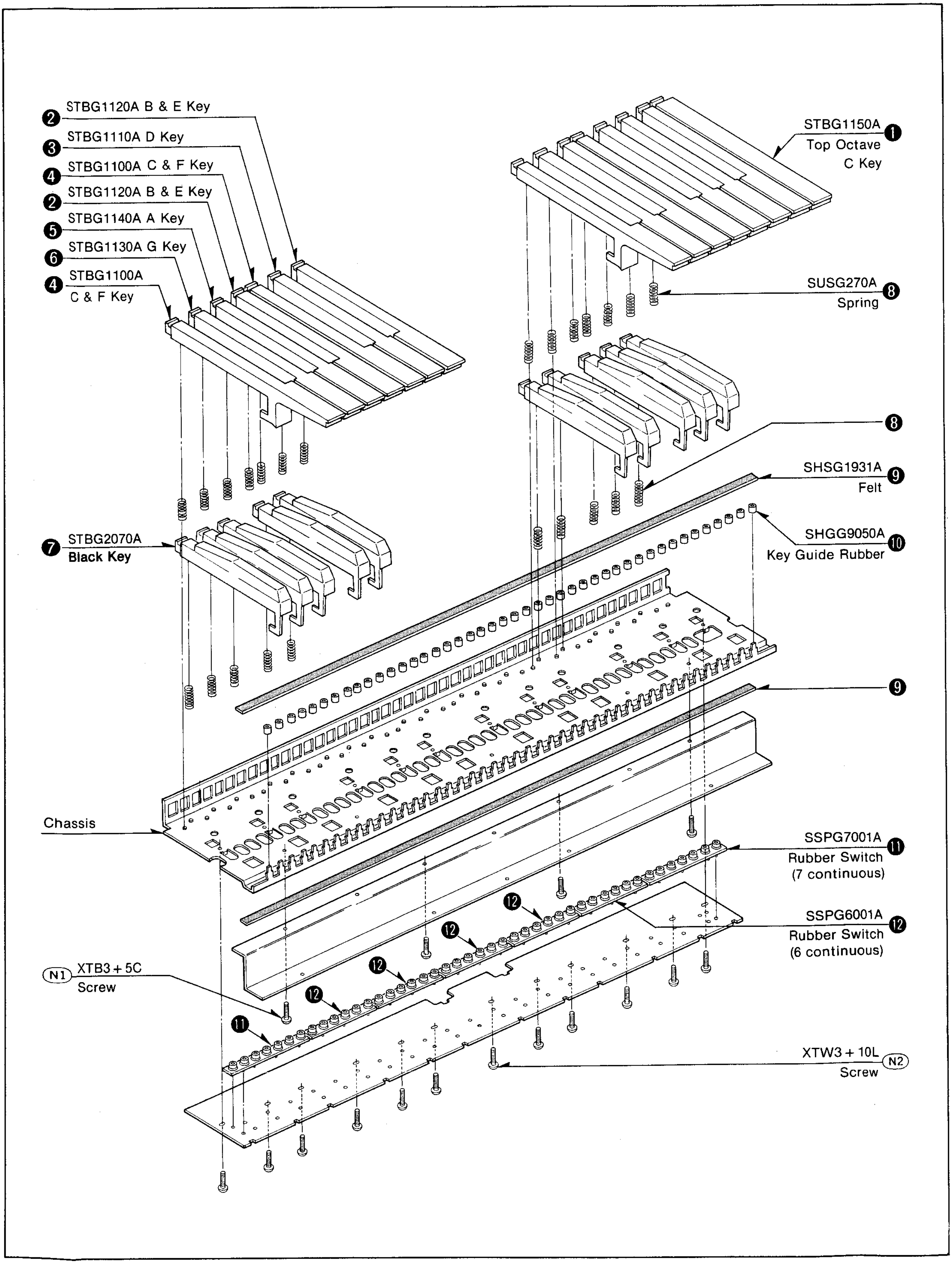
• SX-EX60... Woody face cabinet

	Ref. No.	Part No.	Description	Per/Set
		CABINET PARTS (SX-EX60)		
○	1-1	SKGG1B100B	Music Rack	1
	1-2	SGXG2290B	Ornament	1
	2	SKPG840B	Top Cover Ass'y	1
	2-1	SGXG2100B	Ornament	1
	2-2	SGBG100A	Technics Badge	1
	2-3	SHRG8270B	Cap, Left Side	1
	2-4	SHRG8280B	Cap, Right Side	1
○	3	SGWG1730C	Control Panel	1
○	3-1	SGKG2160A	Musical Display Panel	1
	4	SHSG1640A	Felt	2
○	5	SHGG8420A	Spacer for Musical	1
○	6	SHGG8410A	Spacer Display	2
	7	SHSG1890A	Felt	1
	8	SYWG5111F	Upper Right End Cover Panel	1
	8-1	SKEG1090A	Receptacle	1
	8-2	SKEG1100A	Slide Cover for Memory	1
	8-3	SKEG1111A	Dust Cover Pack	1
	8-4	SUSG300A	Spring	1
○	9	SGWG3150K	Lower Right End Cover Panel	1
	10	SGXG2140A	Ornament Panel, for Lower Keyboard	1
○	11	SYWG8130B	Left End Cover Panel	1
	11-1	SGEG180A	Ornament	1
○	12	SKZG7590A	Rear Board, Upper Side	1
○	13	SYUG1110A	Rear Board, Lower Side	1
	14	SKHG50A	Handle	2
○	15	SKMG1400B	Cabinet (Upper Unit)	1
○	15 EZ	SKMG1401B	Cabinet (Upper Unit), [EZ] only	1
	15-1	SKEG7340A	Sliding Cover Guide	2
	15-2	SGXG2120C	Front Panel	1
	15-3	SHRG9200A	P.C.B. Holder	6, 8 EZ
	15-4	SGMG180A	Net	2
○	15-5	SHSG2870A	Felt	1
○	16	SKZGC700B	Side Panel	2
	16-1	SHGG9040A	Catch Rubber (brown)	4
	16-2	SHGG9040B	Catch Rubber (black)	4
○	17	SKMG1410B	Cabinet (Lower Unit)	1
	17-1	SGXG1100A	Ornament, for Expression	1
	17-2	SHRG2080A	Foot	4
	17-3	SHRG9200A	P.C.B. Holder	4
○	18	SKZG8330B	Sliding Cover	1
	18-1	SGXG414A	Ornament	1
	18-2	SHSG1550A	Felt	2
	18-3	SBEG30A	Lock	1
	18-4	SBEG40A	Staple	1
	19	SHRG1120A	AC Cord Clamper (A)	1
	20	SHRG1110A	AC Cord Clamper (B)	1
	21	SMKG2800A	Jack 2 Panel	1
	22	SMKG2670C	Jack 1 Panel	1
	23	SHRG1030A	Cord Band	1
		BENCH		
○		SZ-CM94D		1

	Ref. No.	Part No.	Description	Per/Set
	SCREWS & WASHERS			
	N1 **EX60-K**	XYN3+F6FZ	Screw, SX-EX60-K only	4
	N1 **EX60**	XYN3+F6FVC	Screw, SX-EX60 only	4
	N2	XTB3+12A	Screw	25
	N3	XTT4+12AFR	Screw	3
	N4	XWG3×13	Washer	2
	N5	XTB35+14A	Screw	2
	N6	XTB4+12A	Screw	28
	N7	XTT4+14AFVC	Screw	8
	N8	XTT4+10A	Screw	3
	N9	XYN5+C10S	Screw, with Washer	2
	N10	XTV3+10G	Screw	6
	N11	XYN3+F14S	Screw, with Washer	4
	N12	XTB35+20AFZ	Screw	2
	N13	SNEG740A	Screw	2
	N14	XYN4+F10S	Screw, with Washer	2
	N15	XTT4+16AFVC	Screw	12
	N16	XTT4+25AFVC	Screw	14
	N17	XTS3+20A	Screw	4
	N18	XTB35+20A	Screw	10
	N19	XTT4+14A	Screw	4
	N20	XTT4+30A	Screw	2
	N21	XTB35+10A	Screw	11
	N22	XTB3+8BFVC	Screw	2
	N23	XTT35+10AFVC	Screw	6
	N24	SHEG150A	Washer	8
	N25	XWA5B	Washer	2
	N26	XSN5+85S	Screw	2
	N27	XYN5+C25S	Screw, with Washer	6
	N28	SNEG410F	Bolt (black)	2
	N29	SNEG410B	Bolt (red)	4
	N30	XYN4+F20FZS	Screw, with Washer	6
	N31	XTT4+12A	Screw	19
	N32	XTB35+25A	Screw	8
	N33	SNEG1320B	Screw	4
	N34	XYN4+F14S	Screw, with Washer	4
	N35	XYN3+K10FZS	Screw, with Washer	6
	N36	SNEG770A	Washer	3
	N37	XNS12FZ	Nut	3
	N38	SNE4021-1	Nut	1
	N39	SNE499-1	Nut	4
	N40	SNE491	Nut	4
	N41	SHR401-1	Nylon Latch	2
	N42	XTS3+10AFVC	Screw	5
	N43	XTB3+10A	Screw	3
	N44	XTB3+14A	Screw	8
	N45	XYN3+F20S	Screw, with Washer	2
	N46	XTV3+8B	Screw	2
	N47	XTB4+10A	Screw	3
	ASSEMBLY PARTS			
	26	SXVG5020C	Expression Unit	1
	27	SJUG25005N	Reverb Unit	1
	28	SHRG550	Cushion, for Reverb Unit	2

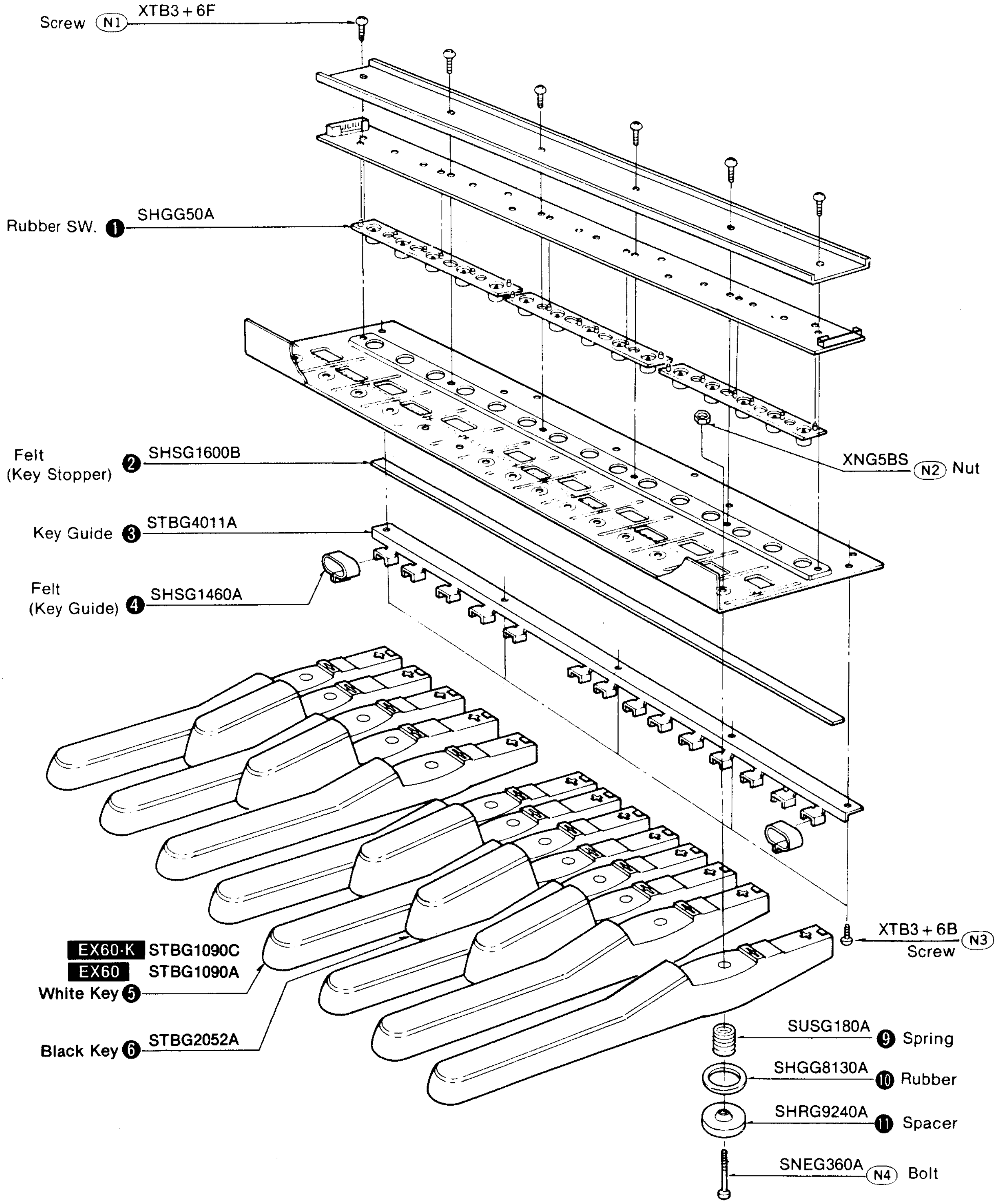
	Ref. No.	Part No.	Description	Per/Set
	ACCESSORIES			
	29	SBEG60A	Key	1
		SBEG20A	Hexagonal Rod Wrench	1
	INSTRUCTION BOOK			
○		SQFGA340	Instruction Book	1
○		SQFGA220	Instruction Book, [EN][EL] only	1
○		SQFGA320	Instruction Book, [MC][EK][EP][XT][XV][X] [XX][XL][XR][XS] only	1
	MANUAL KEYBOARD			
	1	STBG1150A	White Key (Top Octave C Key)	1
	2	STBG1120A	White Key (B & E Key)	7
	3	STBG1110A	White Key (D Key)	3
	4	STBG1100A	White Key (C & F Key)	7
	5	STBG1140A	White Key (A Key)	4
	6	STBG1130A	White Key (G Key)	4
	7	STBG2070A	Black Key	18
	8	SUSG270A	Spring	44
	9	SHSG1931A	Felt	2
	10	SHGG9050A	Key Guide Rubber	44
	11	SSPG7001A	Rubber Switch (7 continuous)	2
	12	SSPG6001A	Rubber Switch (6 continuous)	5
	N1	XTB3+5C	Screw	5
	N2	XTW3+10L	Screw	12
	PEDAL KEYBOARD			
	1	SHGG50A	Rubber Switch (5 continuous)	3
	2	SHSG1600B	Felt (Key Stopper)	1
	3	STBG4011A	Key Guide	1
	4	SHSG1460A	Felt (Key Guide)	13
○	5 **EX60-K**	STBG1090C	White Key, SX-EX60-K only	8
	5 **EX60**	STBG1090A	White Key, SX-EX60 only	8
	6	STBG2052A	Black Key	5
	7	SUSG180A	Spring	13
	8	SHGG8130A	Rubber	13
	9	SHRG9240A	Spacer	13
	N1	XTB3+6F	Screw	6
	N2	XNG5BS	Nut	13
	N3	XTB3+6B	Screw	5
	N4	SNEG360A	Bolt	13

EXPLODED VIEWS OF PEDAL KEYBOARD



❷ STBG1120A B & E Key
❸ STBG1110A D Key
❹ STBG1100A C & F Key
❷ STBG1120A B & E Key
❺ STBG1140A A Key
❻ STBG1130A G Key
❹ STBG1100A C & F Key
STBG1150A ❶ Top Octave C Key
SUSG270A ❽ Spring
❽
SHSG1931A ❾ Felt
SHGG9050A ❿ Key Guide Rubber
❼ STBG2070A Black Key
❾
Chassis
SSPG7001A ⓫ Rubber Switch (7 continuous)
SSPG6001A ⓬ Rubber Switch (6 continuous)
⓬
⓬
⓬
⓬
⓫
(N1) XTB3 + 5C Screw
XTW3 + 10L (N2) Screw

EXPLODED VIEWS OF PEDAL KEYBOARD


Screw (N1) XTB3 + 6F
Rubber SW. ❶ SHGG50A
Felt (Key Stopper) ❷ SHSG1600B
Key Guide ❸ STBG4011A
Felt (Key Guide) ❹ SHSG1460A
XNG5BS (N2) Nut
EX60-K STBG1090C
EX60 STBG1090A
White Key ❺
Black Key ❻ STBG2052A
XTB3 + 6B (N3) Screw
SUSG180A ❾ Spring
SHGG8130A ❿ Rubber
SHRG9240A ⓫ Spacer
SNEG360A (N4) Bolt

Ref. No.	Part No.	Description		Per/Set
		BUTTON (SX-EX60-K)		
	SBCG20147	Power Switch		1
○	SBCG150G02	upper tab voices	upper orchestral conductor	1
	SBCG140G77	solo presets		1
○	SBCG140G79	percussive presets		1
○	SBCG140G81	orchestral presets		1
	SBCG140G83	string ensemble		1
○	SBCG150H02	lower tab voices	lower orchestral conductor	1
	SBCG140H25	solo presets		1
○	SBCG140H26	percussive presets		1
○	SBCG140H28	orchestral presets		1
	SBCG140H30	string ensemble		1
○	SBCG130N01	flute 16′	upper tab voices	1
○	SBCG130N02	flute 8′		1
○	SBCG130N03	flute $5^{1}/_{3}'$		1
○	SBCG130N04	flute 4′		1
○	SBCG130N05	flute $2^{2}/_{3}'$		1
○	SBCG130N06	flute 2′		1
○	SBCG130N07	flute $1^{1}/_{3}'$		1
○	SBCG130N08	flute 1′		1
○	SBCG130H01	String 8′		1
○	SBCG130H02	String 4′		1
	SBCG170G00	Volume		2
	SBCG160K00	upper harmonic coupler $2^{2}/_{3}'$		1
	SBCG160H00	slow attack		1
○	SBCG130N09	$5^{1}/_{3}'$	upper percussive tone	1
○	SBCG130N10	4′		1
○	SBCG130N11	$2^{2}/_{3}'$		1
○	SBCG130N12	2′		1
○	SBCG130H03	click		1
	SBCG160H00	long		1
	SBCG170G00	volume		2
○	SBCG130N02	flute 8′	lower tab voices	1
○	SBCG130N04	flute 4′		1
○	SBCG130N06	flute 2′		1
○	SBCG130H01	string 8′		1
○	SBCG130H02	string 4′		1
	SBCG170G00	volume		2
	SBCG160K00	lower harmonic coupler 2′		1
○	SBCG130N13	U tab voices	multi-tremoro	1
○	SBCG130N14	L tab voices		1
○	SBCG130H04	slow/fast		1
	SBCG140H32	tab voices	celeste	2
	SBCG140G77	solo presets		1
○	SBCG140G81	orchestral presets		1
	SBCG140G86	set	Voice Setting Computer	1
	SBCG141H01	cancel		1
	SBCG140N01	1		1
	SBCG140N02	2		1
	SBCG140N03	3		1
	SBCG140N04	4		1

Ref. No.	Part No.	Description		Per/Set
	SBCG140G32	piano	U & L percussive presets	1
○	SBCG140G31	electric piano		1
	SBCG140G34	harpsichord		1
	SBCG140G36	vibraphone		1
	SBCG140G38	guitar		1
	SBCG140G35	banjo		1
	SBCG170G00	volume		2
	SBCG140G40	trombone	U & L orchestral presets	1
	SBCG140G42	saxophone		1
	SBCG140G43	accordion		1
	SBCG140G44	clarinet		1
	SBCG140G46	wah brass		1
○	SBCG140G45	synthe brass		1
	SBCG170G00	volume		2
	SBCG140G40	trombone	U & L solo presets	1
	SBCG140G42	saxophone		1
○	SBCG140G39	trumpet		1
	SBCG140G44	clarinet		1
	SBCG140G51	flute		1
	SBCG140G53	pan flute		1
○	SBCG140G89	synthe I		1
○	SBCG140G90	synthe II		1
	SBCG170G00	volume		2
	SBCG140N14	bass 16′	bass	1
	SBCG140N13	bass 8′		1
	SBCG140G24	electric bass		1
○	SBCG140G27	tuba		1
	SBCG170G00	volume		2
	SBCG170G00	upper volume	string ensemble	2
	SBCG170G00	lower volume		2
	SBCG140N07	I	rhythm composer	1
	SBCG140N08	II		1
	SBCG140G56	march	drum percussion selector	1
	SBCG140G57	swing I		1
	SBCG140G58	8 beat		1
	SBCG140G59	16 beat		1
	SBCG140G60	ballad		1
	SBCG140G61	disco I		1
	SBCG140G62	rhumba		1
	SBCG140G63	bossa nova I		1
	SBCG140G64	mambo		1
	SBCG140G65	samba		1
	SBCG140G66	waltz		1
	SBCG140G67	tango		1
	SBCG140N09	rhythm sequencer		1
	SBCG140N09	drum variation		1
	SBCG140H20	on	drum percussion	1
○	SBCG140G93	mellow		1
	SBCG170G00	volume		2
	SBCG140H21	I/II	rhythmic orchestra	1
	SBCG140G68	rhythmic		1
	SBCG140G69	melodic		1
	SBCG170G00	volume		2
○	SBCG140H13	I	arrange percussion	1
○	SBCG140H14	II		1

Ref. No.	Part No.	Description	Per/Set
	SBCG140N07	I } fill in	1
	SBCG140N08	II	1
○	SBCG140G92	fine } tempo set	1
○	SBCG140H13	I	1
○	SBCG140H14	II	1
	SBCG140H00	pedal to lower	1
	SBCG140G70	close/open } techni-chord	1
	SBCG140H20	on	1
	SBCG140G71	vari } intro & ending	1
	SBCG140J05	on	1
	SBCG141G01	cancel } Program Chord Computer	1
	SBCG140G72	PCC	1
	SBCG140H22	fingered	1
	SBCG140H23	memory	1
	SBCG140K07	one touch play	1
	SBCG140G73	record	1
	SBCG140G74	glide/rhythm	1
	SBCG140G75	synchro & break } drum percussion	1
○	SBCG150N00	beat	1
	SBCG160H00	on } upper } sustain	1
	SBCG170G00	control	2
	SBCG160H00	on } U & L percussive presets	1
	SBCG170G00	control	2
	SBCG160H00	on } lower	1
	SBCG170G00	control	2
	SBCG170G00	control, bass	2
	SBCG170G00	reverb	2
	SBCG160H00	free set } tuning	1
	SBCG170G00	volume	2
	SBCG160N00	bass, lower } Play Sequencer	2
	SBCG160H00	upper, solo	2
	SBCG170G00	main volume	2
	SBCG140J00	Fullband Setting Computer	1
	SHRG9390A	lever } tang switch button	23
	SHRG9400A	case	23
	SHRG9410A	lever } push switch button	132
	SHRG9430A	lever (2 continuous)	3
	SHRG9420A	case	138

BUTTON (SX-EX60)

Ref. No.	Part No.	Description	Per/Set
	SBCG20147	Power Switch	1
○	SBCG150G02	upper tab voices } upper orchestral conductor	1
	SBCG140G77	solo presets	1
○	SBCG140G79	percussive presets	1
○	SBCG140G81	orchestral presets	1
○	SBCG140G83	string ensemble	1
○	SBCG150H02	lower tab voices } lower orchestral conductor	1
	SBCG140H25	solo presets	1
○	SBCG140H26	percussive presets	1
○	SBCG140H28	orchestral presets	1
	SBCG140H30	string ensemble	1
	SBCG130A01	flute 16′ } upper tab voices	1
	SBCG130A02	flute 8′	1
	SBCG130A03	flute $5^{1}/_{3}$′	1
	SBCG130A04	flute 4′	1
	SBCG130A05	flute $2^{2}/_{3}$′	1
	SBCG130A06	flute 2′	1
	SBCG130A07	flute $1^{1}/_{3}$′	1
	SBCG130A08	flute 1′	1
	SBCG130B01	String 8′	1
	SBCG130B02	String 4′	1
	SBCG170G00	Volume	2
	SBCG160K00	upper harmonic coupler $2^{2}/_{3}$′	1
	SBCG160C00	slow attack	1
	SBCG130A18	$5^{1}/_{3}$′ } upper percussive tone	1
	SBCG130A09	4′	1
	SBCG130A10	$2^{2}/_{3}$′	1
	SBCG130A11	2′	1
	SBCG130C01	click	1
	SBCG160C00	long	1
	SBCG170G00	volume	2
	SBCG130A02	flute 8′ } lower tab voices	1
	SBCG130A04	flute 4′	1
	SBCG130A06	flute 2′	1
	SBCG130B01	string 8′	1
	SBCG130B02	string 4′	1
	SBCG170G00	volume	2
	SBCG160K00	lower harmonic coupler 2′	1
	SBCG130A12	U tab voices } multi-tremolo	1
	SBCG130A13	L tab voices	1
	SBCG130D02	slow/fast	1
	SBCG140A16	tab voices } celeste	2
○	SBCG140F24	solo presets	1
	SBCG140E20	orchestral presets	1
	SBCG140A36	set } Voice Setting Computer	1
	SBCG141D01	cancel	1
	SBCG140L13	1	1
	SBCG140L14	2	1
	SBCG140L15	3	1
	SBCG140L16	4	1
	SBCG140B03	piano } U & L percussive presets	1
	SBCG140B02	electric piano	1
	SBCG140B04	harpsichord	1
	SBCG140B05	vibraphone	1
	SBCG140B08	guitar	1
	SBCG140B09	banjo	1
	SBCG170G00	volume	2
	SBCG140E01	trombone } U & L orchestral presets	1
	SBCG140E02	saxophone	1
	SBCG140E03	accordion	1

Ref. No.	Part No.	Description	Per/Set
	SBCG140E04	clarinet	1
	SBCG140E05	wah brass } U & L orchestral presets	1
	SBCG140E06	synthe brass	1
	SBCG170G00	volume	2
	SBCG140F01	trombone	1
	SBCG140F02	saxophone	1
	SBCG140F03	trumpet	1
	SBCG140F04	clarinet	1
	SBCG140F05	flute } U & L solo presets	1
	SBCG140F06	pan flute	1
○	SBCG140F25	synthe I	1
○	SBCG140F26	synthe II	1
	SBCG170G00	volume	2
	SBCG140A03	bass 16′	1
	SBCG140A04	bass 8′	1
	SBCG140B10	electric bass } bass	1
	SBCG140F09	tuba	1
	SBCG170G00	volume	2
	SBCG170G00	upper volume } string ensemble	2
	SBCG170G00	lower volume	2
	SBCG140E16	I } rhythm composer	1
	SBCG140E17	II	1
	SBCG140A23	march	1
	SBCG140C10	swing I	1
	SBCG140C11	8 beat	1
	SBCG140A24	16 beat	1
	SBCG140A25	ballad	1
	SBCG140C12	disco I } drum percussion selector	1
	SBCG140C13	rhumba	1
	SBCG140A26	bossa nova I	1
	SBCG140A27	mambo	1
	SBCG140C14	samba	1
	SBCG140C15	waltz	1
	SBCG140A28	tango	1
	SBCG140E11	on, rhythm sequencer	1
	SBCG140J05	on, drum variation	1
	SBCG140K01	on	1
	SBCG140J01	mellow } drum percussion	1
	SBCG170G00	volume	2
	SBCG140B15	I/II	1
	SBCG140E09	rhythmic } rhythmic orchestra	1
	SBCG140E08	melodic	1
	SBCG170G00	volume	2
	SBCG140B13	I } arrange percussion	1
	SBCG140B14	II	1
	SBCG140K02	I } fill in	1
	SBCG140K03	II	1
	SBCG140A29	fine	1
	SBCG140L01	I } tempo set	1
	SBCG140L02	II	1
	SBCG140C00	pedal to lower	1
	SBCG140L08	close/open } techni-chord	1
	SBCG140D02	on	1

Ref. No.	Part No.	Description	Per/Set
	SBCG140K08	vari } intro & ending	1
	SBCG140J05	on	1
	SBCG141K01	cancel	1
	SBCG140J02	PCC } Program Chord Computer	1
	SBCG140J03	fingered	1
	SBCG140A13	memory	1
	SBCG140B27	one touch play	1
	SBCG140F10	record	1
	SBCG140A30	glide/rhythm	1
	SBCG140A37	synchro & break } drum percussion	1
	SBCG150G00	beat	1
	SBCG160C00	on } upper	1
	SBCG170G00	control	2
	SBCG160C00	on } U & L percussive presets	1
	SBCG170G00	control } sustain	2
	SBCG160C00	on } lower	1
	SBCG170G00	control	2
	SBCG170G00	control, bass	2
	SBCG170G00	reverb	2
	SBCG160C00	free set } tuning	1
	SBCG170G00	volume	2
	SBCG160B00	bass, lower } Play Sequencer	2
	SBCG160E00	upper, solo	2
	SBCG170G00	main volume	2
	SBCG140L00	Fullband Setting Computer	1
	SHRG9390A	lever } tang switch button	23
	SHRG9400A	case	23
	SHRG9410A	lever	132
	SHRG9430A	lever (2 continuous) } push switch button	3
	SHRG9420A	case	138

REPLACEMENT PARTS LIST......Electrical Parts

Notes:

1. Printed circuit boards are supplied only during the period of production.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.
6. Cabinet Colour
   EX60-K : Black face
   EX60 : Woody face

■ Numbering System of Resistor

- All resistors are 1/4 WATT, ±5% TOLERANCE unless otherwise designated in the schematic diagram.
- Resistors with Ⓕ symbolic mark are Flame-Proof resistors.
- Resistors with 🄵 symbolic mark are fuse type Flame-Proof resistors.

Resistor Type	Wattage	Tolerance
ERD : Carbon	S2 : 1/4W	F : ±1%
ERD—F : Carbon, Flame-Proof	2 : 1/4W	G : ±2%
	25 : 1/4W	J : ±5%
ERO : Metal Film	50 : 1/2W	
ERG : Metal Oxide	1 : 1W	
ERX : Metal Film	2 : 2W	

Example:

Carbon:	ERD	S2	T	J	101
	Type	Wattage	Shape	Tolerance	Value

Carbon Flame-Proof:	ERD	2	F	C	G	101
	Type	Wattage	Flame-Proof	Fuse Type	Tolerance	Value

Metal Film:	ERO	S2	T	K	F	2201
	Type	Wattage	Shape	Peculiarity use	Tolerance	Value

Metal Oxide (Metal Film):	ERG(X)	1	AN	J	121
	Type	Wattage	Shape	Tolerance	Value

■ Numbering System of Capacitor

- All capacitors are microfarads unless otherwise specified in the schematic diagram.

Capacitor Type	Symbol Mark	Voltage		Tolerance
		ECEA Type	Others	
ECEA : Electrolytic		0J : 6.3V	1H : 50V	ECEA Type : ±20%
ECEA—N : Non-Polar Electrolytic	Ⓝ	1C : 16V	1E : 25V	J : ±5%
ECEA—Y : Non-Polar Electrolytic	Ⓨ	1E : 25V	1V : 35V	K : ±10%
ECEA—M : Electrolytic, MSR Series	(MS)	1H : 50V		M : ±20%
ECEA—Z : Electrolytic, Z Series	Ⓩ	50Y : 50V		Z : $^{+80}_{-20}$%
ECEA—K : Electrolytic, miniature type	Ⓚ	50M : 50V		F : ±1pF
ECQV : TF Capacitor	(TF)	50Z : 50V		
ECQB : Polyester	(TF)			
ECQM(G) : Polyester				
ECC : Ceramic	○			
ECK : Ceramic	○			
ECS : Tantalume Solid Electrolytic	Ⓣ			

Example:

Electrolytic:	ECEA	0J	U	330
	Type	Voltage	Peculiarity use	Value

MSR Series:	ECEA	50	M	R47	R
	Type	Voltage	Peculiarity use	Value	Special use

TF, Polyester:	ECQV	1H	102	J
	Type	Voltage	Value	Tolerance

Ceramic:	ECC(K)	R	1H	220	J
	Type	Shape	Voltage	Value	Tolerance

Tantalume Solid:	ECS	F	1V	Z	105
	Type	Shape	Voltage	Peculiarity use	Value

■ PRINTED CIRCUIT BOARD

Ref. No.		Part No.	Description	Per/Set
○		SXPG131441	System Assigner (SAS)	1
○		SXPG131521	Tone Generator Module (TGM)	1
		┌ SXPG12311	L. Sustain Control (LSC)	(1)
○		└ SXPG123141	U. Sustain Control (USC)	(1)
○		SXPG117461A	Organ (ORG)	1
○		SXPG132911	Percussive Tone (PCT)	1
○		SXPG120941A	Orchestral Presets (OPS)	1
○		SXPG130331	Digital Percussive Presets (DPPS)	1
○		SXPG116861	Accompaniment (ACC)	1
○		SXPG1132111	Solo Presets (SPS)	1
○		SXPG1132121	Bass (BAS)	1
○		SXPG133011	Drum Percussion (DP)	1
○		SXPG120941B	Selector (SEL)	1
○		SXPG131721	Tremolo & Celeste Modulation (LCM)	1
○		SXPG133111	Mixing (MIX)	1
○		SXPG133211	Mother Board (MB)	1
	EZ	SXPG133231	Mother Board (MB), [EZ] only	1
○	EX60-K	SXPG132611	Upper Control Panel Right (CPR)	1
○	EX60-K	SXPG132711	Upper Control Panel Left (CPL)	1
○	EX60-K	SXPG132811A	Lower Control Panel Left (CPSL)	1
○	EX60-K	SXPG132811B	Lower Control Panel Right (CPSR)	1
○	EX60	SXPG132621	Upper Control Panel Right (CPR)	1
○	EX60	SXPG132721	Upper Control Panel Left (CPL)	1
○	EX60	SXPG132821A	Lower Control Panel Left (CPSL)	1
○	EX60	SXPG132821B	Lower Control Panel Right (CPSR)	1
		SXEG51A	Musical Display (MD)	1
		SXPG12281	Memory Pack Control (MPC)	1
		SXPG126721	Lower Keyboard (LKB)	1
		SXPG126711	Upper Keyboard (UKB)	1
		SXPG11701	Pedal Keyboard (PKB)	1

Ref. No.		Part No.	Description	Per/Set
○		SXPG132121	Jack 1 (JACK 1)	1
	EZ	SXPG132141	Jack 1 (JACK 1), [EZ] only	1
		SXPG131911B	Jack 2 (JACK 2)	1
○		SXPG118071	Network (NW)	1
		SXPG103211	Expression (EXP)	1
○	EZ	SXPG131951C	Filter 1 (LF 1) } [EZ] only	1
	EZ	SXPG131991C	Filter 2 (LF 2) } [EZ] only	1
○		SXPG133411	Power Amplifier (PA)	1
	EZ	SXPG133441	Power Amplifier (PA), [EZ] only	1
○		SXPG131971A	Power Supply (PS)	1
○	MC XT	SXPG1319121A	Power Supply (PS), [MC][XT] only	1
○	EZ	SXPG131951A	Power Supply (PS), [EZ] only	1
		SXPG132311	AC Power Supply (ACP)	1
	MC XT	SXPG132331	AC Power Supply (ACP), [MC][XT] only	1
	EZ	SXPG132351	AC Power Supply (ACP), [EZ] only	1
	EK XS XL XR X XX XV	SXPG132321	AC Power Supply (ACP), [EK][XS][XL][XR][X][XX] [XV] only	1

■ SYSTEM ASSIGNER CIRCUIT (SAS)

Ref. No.		Part No.	Description	Per/Set
			INTEGRATED CIRCUITS	
	IC1	SVIG7810H	1 chip 8 bit Microcomputer	1
	IC2	SVIGM6050211	Gate Array	1
	IC3	SVIG65002017	Gate Array	1
○	IC4	SVIG02EX60-A	256K bit ROM	1
○	IC5	SVIG02EX60-B	256K bit ROM	1
	IC6	SVIGD446415L	64K bit CMOS RAM	1
	IC8	SVIGM74LS03	Quadruple 2-Input NAND Gate	1
	IC9	SVIGM53216	Hex Inverter	1
	IC10	SVIGTC74HC04	Hex Inverter	1
	IC11～16	SVIGM5218L	Operational Amplifier	6
			TRANSISTORS	
	Q1, 2, 6	2SA933STRS		3
	Q4	2SC1047C		1
	Q5	2SC2320LFG		1
			DIODES	
	D1, 2	MA165TA5		2
	D3	MA4036H	Zener	1
			COMPONENT COMBINATIONS	
	Z1～4	EXBP88472MM	4.7KΩ×8	4
			QUARTZ & CERAMIC OSCILLATORS	
	X1	SVQG43U1500A	15MHz, Quartz Oscillator	1
	X2	EFOFC4004A3	4MHz, Ceramic Oscillator	1

Ref. No.		Part No.	Description	Per/Set
			SEMI-FIXED RESISTORS	
	VR1, 2	EVSG0T1B103A	10KΩ B	2
			COILS	
	L1	SLQG80W13A	80μH	1
	L2	SLQG16W33A	16μH	1
			RESISTORS	
		ERDS2TJ330	33Ω	2
		ERDS2TJ101	100Ω	2
		ERDS2TJ331	330Ω	1
		ERDS2TJ471	470Ω	1
		ERDS2TJ681	680Ω	1
		ERDS2TJ102	1KΩ	4
		ERDS2TJ222	2.2KΩ	4
		ERDS2TJ272	2.7KΩ	2
		ERDS2TJ332	3.3KΩ	2
		ERDS2TJ472	4.7KΩ	11
		ERDS2TJ103	10KΩ	4
		ERDS2TJ123	12KΩ	2
		ERDS2TJ223	22KΩ	3
		ERDS2TJ333	33KΩ	1
		ERDS2TJ473	47KΩ	1
		ERDS2TJ823	82KΩ	1
		ERDS2TJ104	100KΩ	6
		ERDS2TJ124	120KΩ	9
		ERDS2TJ184	180KΩ	8
		ERDS2TJ224	220KΩ	2
		ERDS2TJ474	470KΩ	9
		ERDS2TJ105	1MΩ	1
			CAPACITORS	
		ECEA1CU101	100μF, 16V	1
		ECEA50M010R	(MS) 1μF, 50V	1
		ECQG1H102KZ	0.001μF	1
		ECQG1H682KZ	0.0068μF	2
		ECQM1H103KV	0.01μF	7
		ECQM1H333KV	0.033μF	1
		ECQM1H473KV	0.047μF	1
		ECQM1H683KV	0.068μF	8
		ECQV1H104JZ	(TF) 0.1μF	2
		ECQV1H224JZ	(TF) 0.22μF	2
		ECQV1H474JZ	(TF) 0.47μF	1
		ECCR1H220J	○ 22PF	2
		ECCR1H221J	○ 220PF	1
		ECKR1E473ZV	○ 0.047μF	10
		EECW5R5F104	0.1F, 5.5V, Liquid Electrolyte Double Layer	1

■ TONE GENERATOR MODULE CIRCUIT (TGM)

Ref. No.		Part No.	Description	Per/Set
			INTEGRATED CIRCUITS	
	IC1	SVIGUPD6303G	Top Octave Synthe LSI	1
	IC2, 3, 5	SVIGUPD6304G	Tone Generator LSI	3
	IC7～20	SVIGM5218L	Operational Amplifier	14
	IC26	SVIGTC40H393	4 bit Binary Counter	1
	IC27	SVIGTC40H004	Hex Inverter	1

Ref. No.	Part No.	Description	Per/Set
	DIODES		
D1, 2	MA165TA5		2
D3	SVDGRK14		1
	COMPONENT COMBINATIONS		
Z1	EXBP811102MM	1KΩ×11	1
Z2	EXBP810102MM	1KΩ×10	1
Z3	EXBP812102MM	1KΩ×12	1
	COILS		
L1, 2	ELQS180KB	18μH (Master Clock OSC)	2
	PRINTED CIRCUIT BOARDS		
○ SC1	SXPG123141	U. Sustain Control (USC)	1
SC2	SXPG12311	L. Sustain Control (LSC)	1
	RESISTORS		
	ERDS2TJ101	100Ω	2
	ERDS2TJ332	3.3KΩ	2
	ERDS2TJ472	4.7KΩ	7
	ERDS2TJ562	5.6KΩ	1
	ERDS2TJ103	10KΩ	21
	ERDS2TJ273	27KΩ	1
	ERDS2TJ473	47KΩ	4
⚠	ERD2FCJ4R7	🄵 4.7Ω, 1/4W, Fuse Type	1
⚠	ERD2FCG100	🄵 10Ω, 1/4W, Fuse Type	2
⚠	ERD2FCG220	🄵 22Ω, 1/4W, Fuse Type	1
	CAPACITORS		
	ECEA0JU331	330μF, 6.3V	3
	ECEA1EU330	33μF, 25V	2
	ECSF1VE105	Ⓣ 1μF, 35V	5
	ECQG1H102KZ	0.001μF	5
	ECQG1H152KZ	0.0015μF	2
	ECCR1H330J	○ 33PF	2
	ECCR1H221J	○ 220PF	4
	ECCR1H471J	○ 470PF	22
	ECKR1E473ZV	○ 0.047μF	6

■ U. SUSTAIN CONTROL CIRCUIT (USC)

Ref. No.	Part No.	Description	Per/Set
	DIODES		
D1~9	MA165TA5		9
	RESISTORS		
	ERDS2TJ821	820Ω	1
	ERDS2TJ103	10KΩ	1
	ERDS2TJ563	56KΩ	1
	ERDS2TJ823	82KΩ	8
	ERDS2TJ334	330KΩ	8
	CAPACITORS		
	ECQG1H102KZ	0.001μF	1
	ECSF1VE475	Ⓣ 4.7μF, 35V	8

■ L. SUSTAIN CONTROL CIRCUIT (LSC)

Ref. No.	Part No.	Description	Per/Set
	DIODES		
D1~9	MA165TA5		9
	RESISTORS		
	ERDS2TJ821	820Ω	1
	ERDS2TJ103	10KΩ	1
	ERDS2TJ563	56KΩ	1
	ERDS2TJ334	330KΩ	8
	ERDS2TJ155	1.5MΩ	8
	CAPACITORS		
	ECQG1H102KZ	0.001μF	1
	ECSF1VZ105	Ⓣ 1μF, 35V	8

■ ORGAN CIRCUIT (ORG)

Ref. No.	Part No.	Description	Per/Set
	INTEGRATED CIRCUITS		
IC1~7, 9	SVIGM5218L	Operational Amplifier	8
IC10	SVIGUPD4066B	Quadruple Bilateral Switch	1
	RESISTORS		
	ERDS2TJ332	3.3KΩ	2
	ERDS2TJ682	6.8KΩ	5
	ERDS2TJ822	8.2KΩ	4
	ERDS2TJ103	10KΩ	8
	ERDS2TJ123	12KΩ	5
	ERDS2TJ153	15KΩ	11
	ERDS2TJ183	18KΩ	6
	ERDS2TJ223	22KΩ	12
	ERDS2TJ273	27KΩ	10
	ERDS2TJ333	33KΩ	12
	ERDS2TJ393	39KΩ	8
	ERDS2TJ473	47KΩ	18
	ERDS2TJ563	56KΩ	9
	ERDS2TJ683	68KΩ	9
	ERDS2TJ823	82KΩ	10
	ERDS2TJ104	100KΩ	4
	ERDS2TJ124	120KΩ	5
	ERDS2TJ154	150KΩ	5
	ERDS2TJ184	180KΩ	2
	ERDS2TJ224	220KΩ	2
⚠	ERD2FCJ4R7	🄵 4.7Ω, 1/4W, Fuse Type	1
⚠	ERD2FCG100	🄵 10Ω, 1/4W, Fuse Type	2
	CAPACITORS		
	ECEA0JU101	100μF, 6.3V	1
	ECEA1CU470	47μF, 16V	1
	ECEA1EU330	33μF, 25V	2
	ECEA1HN010S	Ⓝ 1μF, 50V	2
	ECQG1H682KZ	0.0068μF	1
	ECQM1H103KV	0.01μF	1
	ECQM1H153KV	0.015μF	1
	ECQM1H223KV	0.022μF	2
	ECQM1H333KV	0.033μF	1
	ECQM1H473KV	0.047μF	2
	ECQB1H102JZ	(TF) 0.001μF	12
	ECQB1H152JZ	(TF) 0.0015μF	8

Ref. No.	Part No.	Description	Per/Set
	ECQB1H222JZ	(TF) 0.0022µF	10
	ECQB1H332JZ	(TF) 0.0033µF	10
	ECQB1H472JZ	(TF) 0.0047µF	14
	ECQB1H682JZ	(TF) 0.0068µF	14
	ECQB1H103JZ	(TF) 0.01µF	16
	ECQB1H153JZ	(TF) 0.015µF	6
	ECQB1H223JZ	(TF) 0.022µF	6
	ECQB1H333JZ	(TF) 0.033µF	2
	ECQB1H473JZ	(TF) 0.047µF	2
	ECQB1H683JZ	(TF) 0.068µF	4
	ECQV1H104JZ	(TF) 0.1µF	2
	ECCR1H151J	○ 150PF	3
	ECCR1H221J	○ 220PF	2
	ECCR1H331J	○ 330PF	6
	ECCR1H471J	○ 470PF	2
	ECCR1H681J	○ 680PF	11
	ECKR1E473ZV	○ 0.047µF	5

■ PERCUSSIVE TONE CIRCUIT (PCT)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1~4, 8, 9	SVIGM5218L	Operational Amplifier	6
IC6	SVIGM5241L	Dual VCF (Voltage Controlled Filter)	1
TRANSISTOR			
Q1	2SJ40CD	FET	1
RESISTORS			
	ERDS2TJ152	1.5KΩ	1
	ERDS2TJ222	2.2KΩ	2
	ERDS2TJ472	4.7KΩ	1
	ERDS2TJ103	10KΩ	10
	ERDS2TJ153	15KΩ	2
	ERDS2TJ273	27KΩ	1
	ERDS2TJ473	47KΩ	10
	ERDS2TJ563	56KΩ	11
	ERDS2TJ683	68KΩ	6
	ERDS2TJ104	100KΩ	1
	ERDS2TJ154	150KΩ	5
	ERDS2TJ184	180KΩ	1
	ERDS2TJ224	220KΩ	2
	ERDS2TJ105	1MΩ	1
⚠	ERD2FCG100	🄵 10Ω, 1/4W, Fuse Type	2
CAPACITORS			
	ECEA1CU101	10µF, 16V	2
	ECQG1H152KZ	0.0015µF	5
	ECQG1H222KZ	0.0022µF	3
	ECQG1H332KZ	0.0033µF	4
	ECQG1H472KZ	0.0047µF	1
	ECQG1H682KZ	0.0068µF	4
	ECQM1H103KV	0.01µF	4
	ECQM1H153KV	0.015µF	3
	ECQM1H223KV	0.022µF	3
	ECQM1H333KV	0.033µF	1
	ECQM1H473KV	0.047µF	2
	ECQV1H104KV	(TF) 0.1µF	1

Ref. No.	Part No.	Description	Per/Set
	ECCR1H101J	○ 100PF	1
	ECCR1H221J	○ 220PF	2
	ECCR1H331J	○ 330PF	3
	ECCR1H471J	○ 470PF	3
	ECCR1H681J	○ 680PF	4

■ ORCHESTRAL PRESETS CIRCUIT (OPS)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM8041145	1 Chip 8 bit Microcomputer	1
IC2	SVIGNJM082D	Operational Amplifier	1
IC3	SVIGTC40H004	Hex Inverter	1
IC4, 8, 9, 14, 16	SVIGM5218L	Operational Amplifier	5
IC5	SVIGBA6704	VCF (Voltage Controlled Filter)	1
IC6	SVIGHD14051B	8-channel Multiplexer	1
IC7	SVIGTC4053BP	Triple 2-channel Multiplexer	1
IC13, 17	SVIGUPC1252H	VCA (Voltage Controlled Amplifier)	2
IC15	SVIGUPC1253H	RMS Level Sensor	1
TRANSISTORS			
Q1, 2	2SJ40CD	FET	2
DIODES			
D1, 2	MA165TA5		2
D3, 4	MA4120M		2
COMPONENT COMBINATION			
Z1	EXBP88334MM	330KΩ×8	1
CERAMIC OSCILLATOR			
X1	SVQGCSA600MT	6MHz	1
SEMI-FIXED RESISTOR			
VR1	EVN60AA00B14	10KΩ B	1
RESISTORS			
	ERDS2TJ220	22Ω	1
	ERDS2TJ331	330Ω	2
	ERDS2TJ102	1KΩ	2
	ERDS2TJ332	3.3KΩ	2
	ERDS2TJ472	4.7KΩ	6
	ERDS2TJ682	6.8KΩ	2
	ERDS2TJ882	8.2KΩ	1
	ERDS2TJ103	10KΩ	6
	ERDS2TJ123	12KΩ	2
	ERDS2TJ153	15KΩ	6
	ERDS2TJ183	18KΩ	1
	ERDS2TJ223	22KΩ	5
	ERDS2TJ273	27KΩ	2
	ERDS2TJ333	33KΩ	9
	ERDS2TJ393	39KΩ	1

Ref. No.	Part No.	Description	Per/Set
	ERDS2TJ473	47KΩ	1
	ERDS2TJ683	68KΩ	1
	ERDS2TJ823	82KΩ	4
	ERDS2TJ104	100KΩ	7
	ERDS2TJ154	150KΩ	2
	ERDS2TJ184	180KΩ	1
	ERDS2TJ274	270KΩ	1
	ERDS2TJ394	390KΩ	1
	ERDS2TJ474	470KΩ	1
	ERDS2TJ564	560KΩ	1
	ERDS2TJ105	1MΩ	2
	ERDS2TJ225	2.2MΩ	2
	EROS2TKF2201	2.2KΩ, ±1%	2
⚠	ERD2FCJ4R7	🄵 4.7Ω, 1/4W, Fuse Type	1
⚠	ERD2FCG100	🄵 10Ω, 1/4W, Fuse Type	3
⚠	ERD2FCG101	🄵 100Ω, 1/4W, Fuse Type	2
CAPACITORS			
	ECEA1CU100	10μF, 16V	2
	ECEA1CU470	47μF, 16V	3
	ECEA1CU101	100μF, 16V	3
	ECEA1EU100	10μF, 25V	1
	ECEA1HU010	1μF, 50V	5
	ECEA1HN010S	Ⓝ 1μF, 50V	4
	ECQG1H102KZ	0.001μF	2
	ECQG1H152KZ	0.0015μF	1
	ECQG1H222KZ	0.0022μF	1
	ECQG1H472KZ	0.0047μF	3
	ECQG1H682KZ	0.0068μF	4
	ECQM1H103KV	0.01μF	3
	ECQM1H153KV	0.015μF	2
	ECQM1H223KV	0.022μF	1
	ECQM1H333KV	0.033μF	2
	ECQM1H683KV	0.068μF	1
	ECQM1H104KV	0.1μF	3
	ECQV1H334JZ	(TF) 0.33μF	1
	ECQV1H474JZ	(TF) 0.47μF	1
	ECCR1H330J	○ 33PF	3
	ECCR1H470J	○ 47PF	3
	ECCR1H101J	○ 100PF	1
	ECCR1H331J	○ 330PF	1
	ECKR1E473ZV	○ 0.047μF	15

■ DIGITAL PERCUSSIVE PRESETS CIRCUIT (DPPS)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	MN40174B	Hex D-Type Flip Flop	1
IC2	SVIGTC40H002	Quadruple 2-Input NOR Gate	1
IC3	SVIGUPD6312	Digital Sound Processor	1
○ IC4	SVIG1000C063	1M bit Mask P-ROM	1
IC6	EHMMS466	12 bit D-A Converter	1
IC7~14	SVIGUPD4066B	Quadruple Bilateral Switch	8
IC15~17, 19	SVIGM5218L	Operational Amplifier	4
IC20	SVIGM5241L	Dual VCF (Voltage Controlled Filter)	1
TRANSISTORS			
Q3~5	2SJ40CD	FET	3

Ref. No.	Part No.	Description	Per/Set
QUARTZ OSCILLATOR			
X1	SVQG43U8000T	8MHz	1
SEMI-FIXED RESISTOR			
VR1	EVSG0E1B472A	4.7KΩ B	1
RESISTORS			
	ERDS2TJ151	150Ω	8
	ERDS2TJ391	390Ω	16
	ERDS2TJ102	1KΩ	3
	ERDS2TJ152	1.5KΩ	1
	ERDS2TJ222	2.2KΩ	1
	ERDS2TJ472	4.7KΩ	2
	ERDS2TJ682	6.8KΩ	2
	ERDS2TJ223	22KΩ	4
	ERDS2TJ273	27KΩ	6
	ERDS2TJ333	33KΩ	1
	ERDS2TJ473	47KΩ	15
	ERDS2TJ563	56KΩ	2
	ERDS2TJ683	68KΩ	1
	ERDS2TJ823	82KΩ	1
	ERDS2TJ104	100KΩ	5
	ERDS2TJ184	180KΩ	3
	ERDS2TJ105	1MΩ	3
⚠	ERD2FCG100	🄵 10Ω, 1/4W, Fuse Type	2
	ERD2FCG220	🄵 22Ω, 1/4W, Fuse Type	1
CAPACITORS			
	ECEA0JU470	47μF, 6.3V	4
	ECEA0JU331	330μF, 6.3V	1
	ECEA1CU100	10μF, 16V	1
	ECEA1CU101	100μF, 16V	2
	ECEA1HU010	1μF, 50V	3
	ECEA1HN010S	Ⓝ 1μF, 50V	1
	ECQB1H102JZ	(TF) 0.001μF	8
	ECQB1H152JZ	(TF) 0.0015μF	1
	ECQB1H332JZ	(TF) 0.0033μF	3
	ECQB1H472JZ	(TF) 0.0047μF	10
	ECQV1H104JZ	(TF) 0.1μF	1
	ECQV1H334JZ	(TF) 0.33μF	1
	ECCR1H220J	○ 22PF	1
	ECCR1H330J	○ 33PF	1
	ECCR1H101J	○ 100PF	5
	ECCR1H221J	○ 220PF	1
	ECCR1H331J	○ 330PF	3
	ECCR1H471J	○ 470PF	5
	ECKR1E473ZV	○ 0.047μF	17

■ ACCOMPANIMENT CIRCUIT (ACC)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGTC40H002	Quadruple 2-Input NOR Gate	1
IC2, 11	SVIGTC40H374	Octal D-Type Flip-Flop	2
IC3, 12	SVIGM53217	Hex Buffer	2
IC4	SVIGM53216	Hex Inverter	1
IC5	SVIGTC4013BP	Dual D-Type Flip-Flop	1

Ref. No.	Part No.	Description	Per/Set
IC6	SVIGBA6110	VCA (Voltage Controlled Amplifier)	1
IC7, 14, 17	SVIGUPD4066B	Quadruple Bilateral Switch	3
IC8～10, 13, 15, 18	SVIGM5218L	Operational Amplifier	6
IC16	SVIGBA6704	VCF (Voltage Controlled Filter)	1
TRANSISTORS			
Q1	2SA933STRS		1
Q2, 3	2SC2320LFG		2
DIODES			
D1～18	MA165TA5		18
RESISTORS			
	ERDS2TJ221	220Ω	2
	ERDS2TJ102	1KΩ	4
	ERDS2TJ122	1.2KΩ	1
	ERDS2TJ332	3.3KΩ	4
	ERDS2TJ472	4.7KΩ	4
	ERDS2TJ562	5.6KΩ	1
	ERDS2TJ682	6.8KΩ	9
	ERDS2TJ822	8.2KΩ	1
	ERDS2TJ103	10KΩ	12
	ERDS2TJ153	15KΩ	5
	ERDS2TJ183	18KΩ	1
	ERDS2TJ223	22KΩ	7
	ERDS2TJ273	27KΩ	3
	ERDS2TJ333	33KΩ	7
	ERDS2TJ473	47KΩ	15
	ERDS2TJ683	68KΩ	2
	ERDS2TJ823	82KΩ	1
	ERDS2TJ104	100KΩ	6
	ERDS2TJ154	150KΩ	3
	ERDS2TJ184	180KΩ	1
	ERDS2TJ224	220KΩ	3
	ERDS2TJ474	470KΩ	5
	ERDS2TJ105	1MΩ	5
⚠	ERD2FCJ4R7	🄵 4.7Ω, 1/4W, Fuse Type	1
⚠	ERD2FCG100	🄵 10Ω, 1/4W, Fuse Type	2
CAPACITORS			
	ECEA0JU221	220μF, 6.3V	1
	ECEA1CU100	10μF, 16V	1
	ECEA1CU470	47μF, 16V	1
	ECEA1CU101	100μF, 16V	2
	ECEA1EU4R7	4.7μF, 25V	1
	ECEA1HU010	1μF, 50V	1
	ECEA50ZR22	ⓩ 0.22μF, 50V	2
	ECEA50ZR68	ⓩ 0.68μF, 50V	3
	ECQG1H472KZ	0.0047μF	3
	ECQG1H682KZ	0.0068μF	2
	ECQM1H103KV	0.01μF	3
	ECQM1H104KV	0.1μF	1
	ECQV1H474JZ	(TF) 0.47μF	1
	ECCR1H151J	○ 150PF	1
	ECCR1H221J	○ 220PF	2
	ECCR1H331J	○ 330PF	3
	ECCR1H681J	○ 680PF	1
	ECKR1E473ZV	○ 0.047μF	10

■ SOLO PRESETS CIRCUIT (SPS)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM8049569	1 chip 8 bit Microcomputer	1
IC3	SVIG02EX50-C	256K bit ROM	1
IC4	SVIG65002019	Gate Array	1
IC5	SVIGHD14046B	Phase Locked Loop	1
IC6	SVIGUPC624C	8 bit D-A Converter	1
IC7	AN6552F	Operational Amplifier	1
IC8	SVIGNJM082D	Operational Amplifier	1
IC9	SVIGUPD4066B	Quadruple Bilateral Switch	1
TRANSISTOR			
Q1	2SC2320LFG		1
DIODES			
D1, 3, 7	MA165TA5		3
COMPONENT COMBINATION			
Z1	EXBP88103MM	10KΩ×8	1
CERAMIC OSCILLATOR			
X1	SVQGCSA110MT	11MHz	1
RESISTORS			
	ERDS2TJ101	100Ω	2
	ERDS2TJ102	1KΩ	1
	ERDS2TJ222	2.2KΩ	1
	ERDS2TJ472	4.7KΩ	8
	ERDS2TJ103	10KΩ	7
	ERDS2TJ153	15KΩ	4
	ERDS2TJ223	22KΩ	2
	ERDS2TJ333	33KΩ	5
	ERDS2TJ473	47KΩ	1
	ERDS2TJ563	56KΩ	1
	ERDS2TJ683	68KΩ	2
	ERDS2TJ104	100KΩ	1
	ERDS2TJ154	150KΩ	1
	ERDS2TJ224	220KΩ	1
	ERDS2TJ105	1MΩ	2
	ERDS2TJ155	1.5MΩ	1
⚠	ERD2FCG220	🄵 22Ω, 1/4W, Fuse Type	2
CAPACITORS			
	ECEA1EU330	33μF, 25V	3
	ECEA1HUR47	0.47μF, 50V	1
	ECEA1HU010	1μF, 50V	1
	ECEA1HN010S	Ⓝ 1μF, 50V	1
	ECEA50ZR1	ⓩ 0.1μF, 50V	1
	ECQG1H102KZ	0.001μF	1
	ECQG1H152KZ	0.0015μF	1
	ECQG1H222KZ	0.0022μF	1
	ECQM1H103KV	0.01μF	1
	ECQM1H153KV	0.015μF	1
	ECQV1H334JZ	(TF) 0.33μF	2
	ECQV1H474JZ	(TF) 0.47μF	1
	ECCR1H220J	○ 22PF	2
	ECCR1H101J	○ 100PF	1
	ECCR1H151J	○ 150PF	2
	ECKR1E473ZV	○ 0.047μF	8

■ BASS CIRCUIT (BAS)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM8049569	1 chip 8 bit Microcomputer	1
IC3	SVIG2364096	64K bit ROM	1
IC4	SVIG65002019	Gate Array	1
IC5	SVIGHD14046B	Phase Locked Loop	1
IC6	SVIGUPC624C	8 bit D-A Converter	1
IC7	AN6552F	Operational Amplifier	1
IC8	SVIGNJM082D	Operational Amplifier	1
IC9	SVIGBA6110	VCA (Voltage Controlled Amplifier)	1
TRANSISTOR			
Q4	2SA933STRS		1
DIODES			
D5, 7	MA165TA5		2
COMPONENT COMBINATION			
Z1	EXBP88103MM	10KΩ×8	1
CERAMIC OSCILLATOR			
X1	SVQGCSA110MT	11MHz	1
RESISTORS			
	ERDS2TJ101	100Ω	1
	ERDS2TJ102	1KΩ	3
	ERDS2TJ472	4.7KΩ	4
	ERDS2TJ103	10KΩ	7
	ERDS2TJ153	15KΩ	2
	ERDS2TJ223	22KΩ	4
	ERDS2TJ333	33KΩ	2
	ERDS2TJ473	47KΩ	2
	ERDS2TJ823	82KΩ	2
	ERDS2TJ124	120KΩ	1
	ERDS2TJ154	150KΩ	1
	ERDS2TJ334	330KΩ	1
	ERDS2TJ105	1MΩ	1
	ERDS2TJ155	1.5MΩ	1
⚠	ERD2FCG220	🄵 22Ω, 1/4W, Fuse Type	2
CAPACITORS			
	ECEA1EU330	33μF, 25V	3
	ECEA1HUR47	0.47μF, 50V	1
	ECEA50ZR1	ⓩ 0.1μF, 50V	1
	ECQG1H102KZ	0.001μF	1
	ECQG1H222KZ	0.0022μF	1
	ECQG1H332KZ	0.0033μF	1
	ECQG1H472KZ	0.0047μF	1
	ECQG1H682KZ	0.0068μF	1
	ECQM1H103KV	0.01μF	1
	ECQM1H333KV	0.033μF	1
	ECCR1H220J	○ 22PF	2
	ECCR1H151J	○ 150PF	2
	ECKR1E473ZV	○ 0.047μF	7

■ DRUM PERCUSSION CIRCUIT (DP)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
○ IC1	MN50015PGQ	Gate Array	1
○ IC2	SVIG1000C061	1M bit Mask P-ROM	1
○ IC3	SVIG1000C062	1M bit Mask P-ROM	1
IC4~7, 9	SVIGM5218L	Operational Amplifier	5
IC8	SVIGM5241L	Dual VCF (Voltage Controlled Filter)	1
IC10	SVIGHA17008P	8 bit D-A Converter	1
IC11	SVIGM5238L	Operational Amplifier	1
IC12, 13	SVIGHD14051B	8-channel Multiplexer	2
TRANSISTOR			
Q1	2SC1047C		1
COMPONENT COMBINATION			
Z3	EXBLD8102G		1
RESISTORS			
	ERDS2TJ471	470Ω	2
	ERDS2TJ102	1KΩ	1
	ERDS2TJ152	1.5KΩ	1
	ERDS2TJ222	2.2KΩ	5
	ERDS2TJ332	3.3KΩ	7
	ERDS2TJ472	4.7KΩ	4
	ERDS2TJ682	6.8KΩ	6
	ERDS2TJ103	10KΩ	1
	ERDS2TJ223	22KΩ	4
	ERDS2TJ333	33KΩ	6
	ERDS2TJ393	39KΩ	4
	ERDS2TJ473	47KΩ	4
	ERDS2TJ823	82KΩ	1
⚠	ERD2FCJ4R7	🄵 4.7Ω, 1/4W, Fuse Type	1
⚠	ERD2FCG100	🄵 10Ω, 1/4W, Fuse Type	2
CAPACITORS			
	ECEA0JU470	47μF, 6.3V	1
	ECEA1CU101	100μF, 16V	1
	ECEA1EU101	100μF, 25V	2
	ECEA1HN010S	Ⓝ 1μF	2
	ECQG1H102KZ	0.001μF	2
	ECQG1H152KZ	0.0015μF	2
	ECCR1H470J	○ 47PF	1
	ECCR1H680J	○ 68PF	2
	ECCR1H151J	○ 150PF	2
	ECCR1H471J	○ 470PF	2
	ECCR1H681J	○ 680PF	2
	ECKR1E473ZV	○ 0.047μF	7

■ SELECTOR CIRCUIT (SEL)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIG65002018	Gate Array	1
IC2~5	SVIGM53217	Hex Buffer	4
IC6~8, 10, 11	SVIGUPD4066B	Quadruple Bilateral Switch	5
IC9, 12~15	SVIGM5218L	Operational Amplifier	5

Ref. No.	Part No.	Description	Per/Set
TRANSISTORS			
Q1, 4, 5, 8, 9, 12, 13, 16	2SA1015GR		8
Q2, 3, 6, 7, 10, 11, 14, 15	2SC1815GR		8
COMPONENT COMBINATIONS			
Z1	EXBP84222M	2.2KΩ×4	1
Z2, 3	EXBP88222M	2.2KΩ×8	2
Z4	EXBP88102M	1KΩ×8	1
Z5~8	SREG6A0511MM	Custom Block Resistor	4
SEMI-FIXED RESISTOR			
VR1	EVN60AA00B54	50KΩ B	1
RESISTORS			
	ERDS2TJ151	150Ω	2
	ERDS2TJ471	470Ω	3
	ERDS2TJ102	1KΩ	15
	ERDS2TJ152	1.5KΩ	3
	ERDS2TJ222	2.2KΩ	2
	ERDS2TJ332	3.3KΩ	2
	ERDS2TJ472	4.7KΩ	8
	ERDS2TJ223	22KΩ	1
	ERDS2TJ823	82KΩ	1
	ERDS2TJ154	150KΩ	1
	ERDS2TJ224	220KΩ	7
⚠	ERD2FCJ4R7	🄵 4.7Ω, 1/4W, Fuse Type	1
⚠	ERD2FCG100	🄵 10Ω, 1/4W, Fuse Type	3
CAPACITORS			
	ECEA1CU100	10μF, 16V	8
	ECEA1CU470	47μF, 16V	1
	ECEA1CU101	100μF, 16V	2
	ECEA1CU221	220μF, 16V	2
	ECEA1CU331	330μF, 16V	2
	ECEA1EU330	33μF, 25V	1
	ECEA1EU331	330μF, 25V	1
	ECQG1H152KZ	0.0015μF	2
	ECQG1H222KZ	0.0022μF	1
	ECQG1H332KZ	0.0033μF	3
	ECQG1H472KZ	0.0047μF	2
	ECQM1H223KV	0.022μF	2
	ECQM1H333KV	0.033μF	1
	ECQM1H473KV	0.047μF	1
	ECCR1H220J	○ 22PF	2
	ECCR1H330J	○ 33PF	3
	ECKR1E473ZV	○ 0.047μF	4

■ TREMOLO & CELESTE MODULATION CIRCUIT (LCM)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC2, 5, 11~13	SVIGMSM4011	Quadruple 2-Input NAND Gate	5
IC3, 4, 8, 17, 18	SVIGM5218L	Operational Amplifier	5
IC6, 7	MN3006	BBD for Audio Signal Delays (128-stage)	2
IC9, 10	SVIGBA6110	VCA (Voltage Controlled Amplifier)	2
IC14~16	MN3009	BBD for Audio Signal Delays (256-stage)	3
TRANSISTORS			
Q1, 3~14	2SC2320LFG		13
Q2	2SJ40CD	FET	1
DIODES			
D1~11	MA165TA5		11
SEMI-FIXED RESISTOR			
VR1	EVSG0T1B223A	22KΩ B	1
RESISTORS			
	ERDS2TJ331	330Ω	6
	ERDS2TJ102	1KΩ	5
	ERDS2TJ222	2.2KΩ	5
	ERDS2TJ332	3.3KΩ	10
	ERDS2TJ103	10KΩ	12
	ERDS2TJ153	15KΩ	9
	ERDS2TJ183	18KΩ	2
	ERDS2TJ223	22KΩ	2
	ERDS2TJ273	27KΩ	3
	ERDS2TJ333	33KΩ	15
	ERDS2TJ473	47KΩ	9
	ERDS2TJ683	68KΩ	1
	ERDS2TJ104	100KΩ	21
	ERDS2TJ154	150KΩ	13
	ERDS2TJ184	180KΩ	1
	ERDS2TJ274	270KΩ	3
	ERDS2TJ474	470KΩ	3
	ERDS2TJ105	1MΩ	1
⚠	ERD2FCG100	🄵 10Ω, 1/4W, Fuse Type	2
⚠	ERD2FCG220	🄵 22Ω, 1/4W, Fuse Type	5
CAPACITORS			
	ECEA1CU100	10μF, 16V	1
	ECEA1CU470	47μF, 16V	2
	ECEA1CU101	100μF, 16V	3
	ECEA1EU470	47μF, 25V	5
	ECEA1HUR47	0.47μF, 50V	3
	ECEA1HU010	1μF, 50V	4
	ECEA1HU2R2	2.2μF, 50V	3
	ECEA1HN010S	Ⓝ 1μF, 50V	2
	ECEA50ZR15	ⓩ 0.15μF, 50V	3
	ECEA50ZR22	ⓩ 0.22μF, 50V	1
	ECQG1H102KZ	0.001μF	5
	ECQG1H682KZ	0.0068μF	2
	ECQM1H223KV	0.022μF	1
	ECQM1H333KV	0.033μF	2
	ECQM1H473KV	0.047μF	3
	ECCR1H680J	○ 68PF	5
	ECCR1H101J	○ 100PF	10
	ECCR1H471J	○ 470PF	3
	ECCR1H681J	○ 680PF	2

■ MIXING CIRCUIT (MIX)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1, 4	SVIGUPC1253H	RMS Level Sensor	2
IC2, 3, 5~7	SVIGUPC1252H	VCA (Voltage Controlled Amplifier)	5
IC8~12, 24, 25	SVIGM5218L	Operational Amplifier	7
IC14	SVIGLM1894N	Noise Reduction	1
IC16, 21	SVIGM5241L	Dual VCF (Voltage Controlled Filter)	2
IC20	SVIGM5216LL	Operational Amplifier	1
TRANSISTORS			
Q3~5	2SJ40CD	FET	3
Q6	2SC2320LFG		1
Q7	2SA933STRS		1
DIODES			
D5~7	MA165TA5		3
COMPONENT COMBINATION			
Z1	EXBP88105MM	1MΩ×8	1
SEMI-FIXED RESISTORS			
VR1, 2	EVSG0T1B104A	100KΩ B	2
RESISTORS			
	ERDS2TJ100	10Ω	2
	ERDS2TJ101	100Ω	4
	ERDS2TJ151	150Ω	2
	ERDS2TJ331	330Ω	3
	ERDS2TJ681	680Ω	1
	ERDS2TJ102	1KΩ	2
	ERDS2TJ152	1.5KΩ	2
	ERDS2TJ222	2.2KΩ	4
	ERDS2TJ332	3.3KΩ	8
	ERDS2TJ472	4.7KΩ	9
	ERDS2TJ103	10KΩ	4
	ERDS2TJ153	15KΩ	3
	ERDS2TJ183	18KΩ	4
	ERDS2TJ223	22KΩ	1
	ERDS2TJ473	47KΩ	3
	ERDS2TJ563	56KΩ	1
	ERDS2TJ683	68KΩ	3
	ERDS2TJ823	82KΩ	1
	ERDS2TJ104	100KΩ	14
	ERDS2TJ124	120KΩ	2
	ERDS2TJ154	150KΩ	3
	ERDS2TJ224	220KΩ	4
	ERDS2TJ274	270KΩ	1
	ERDS2TJ334	330KΩ	2
	ERDS2TJ394	390KΩ	2
	ERDS2TJ474	470KΩ	3
	ERDS2TJ684	680KΩ	3
	ERDS2TJ105	1MΩ	3
	ERDS2TJ225	2.2MΩ	4
⚠	ERG1ANJ121	Ⓕ 120Ω, 1W	1

Ref. No.	Part No.	Description	Per/Set
CAPACITORS			
	ECEA1CU100	10μF, 16V	3
	ECEA1CU470	47μF, 16V	8
	ECEA1HU010	1μF, 50V	12
	ECEA1HN010S	Ⓝ 1μF, 50V	5
	ECEA50ZR1	ⓩ 0.1μF, 50V	1
	ECQG1H102KZ	0.001μF	3
	ECQG1H332KZ	0.0033μF	1
	ECQG1H472KZ	0.0047μF	5
	ECQM1H103KV	0.01μF	2
	ECQM1H333KV	0.033μF	1
	ECQM1H473KV	0.047μF	2
	ECCR1H470J	○ 47PF	3
	ECCR1H680J	○ 68PF	3
	ECCR1H101J	○ 100PF	4
	ECCR1H221J	○ 220PF	2
	ECCR1H331J	○ 330PF	2
	ECKR1E473ZV	○ 0.047μF	5

■ MOTHER BOARD (MB)

Ref. No.	Part No.	Description	Per/Set
COILS			
○ L1	SLCG163307B8		1
L2, 3 EZ	SLQG16W33A	16μH } [EZ] only	2
L4 EZ	SLQG13W4D1	13.5μH } [EZ] only	1

■ UPPER CONTROL PANEL RIGHT CIRCUIT (CPR)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	MN15524PGP	1 chip 4 bit Microcomputer	1
IC2~4	SVIGM53217	Hex Buffer	3
IC5	MN1280R	Reset IC	1
TRANSISTORS			
Q1~4	2SA830B		4
Q5, 6	2SC1047C		2
DIODES			
S D2~62	MA162A		61
D63, 64, 68~70, 72~76, 80~94, 97~113	SEL2210SLFM1	LED (red)	42
D65, 66, 71, 77~79	SEL2710KLFM1	LED (yellow)	6

	Ref. No.	Part No.	Description	Per/Set
		CERAMIC OSCILLATOR		
	X1	EFOFC4004A3	4MHz	1
		SWITCHES		
		SSHG1029A	Switch, for Tang Type	16
		SSHG1030A	Switch, for Push Type	43
		RESISTORS		
		ERDS2TJ470	47Ω	18
		ERDS2TJ152	1.5KΩ	25
		ERDS2TJ222	2.2KΩ	1
		ERDS2TJ472	4.7KΩ	3
		ERDS2TJ103	10KΩ	5
		CAPACITORS		
		ECEA0JU470	47µF, 6.3V	1
		ECCR1H471J	○ 470PF	1
		ECKR1E473ZV	○ 0.047µF	1

■ UPPER CONTROL PANEL LEFT CIRCUIT (CPL)

	Ref. No.	Part No.	Description	Per/Set
		INTEGRATED CIRCUITS		
	IC1	MN15524PGP	1 chip 4 bit Microcomputer	1
	IC2, 3	SVIGM53217	Hex Buffer	2
	IC4	MN1280R	Reset IC	1
		TRANSISTORS		
	Q1~4	2SA830B		4
	Q5, 6	2SC1047C		2
		DIODES		
S	D2~57	MA162A		56
	D58, 60~97	SEL2210SLFM1	LED (red)	39
	D59	SEL2710KLFM1	LED (yellow)	1
		CERAMIC OSCILLATOR		
	X1	EF0FC4004A3	4MHz	1
		SWITCHES		
		SSHG1029A	Switch, for Tang Type	30
		SSHG1030A	Switch, for Push Type	25
		RESISTORS		
		ERDS2TJ470	47Ω	12
		ERDS2TJ152	1.5KΩ	24
		ERDS2TJ222	2.2KΩ	1
		ERDS2TJ472	4.7KΩ	3
		ERDS2TJ103	10KΩ	5
		CAPACITORS		
		ECEA0JU470	47µF, 6.3V	1
		ECCR1H471J	○ 470PF	1
		ECKR1E473ZV	○ 0.047µF	1

■ LOWER CONTROL PANEL LEFT CIRCUIT (CPSL)

	Ref. No.	Part No.	Description	Per/Set
		INTEGRATED CIRCUITS		
	IC1	MN15524PGP	1 chip 4 bit Microcomputer	1
	IC2, 3	SVIGM53217	Hex Buffer	2
	IC4	SVIGTA61	Transistor Array	1
	IC5	MN1280R	Reset IC	1
		TRANSISTORS		
	Q1, 2	2SC1047C		2
		DIODES		
	D2~18, 20~49, 92, 93	MA165TA5		49
	D54, 56~58, 61~67, 69, 71, 73~97	SEL2210SLFM1	LED (red)	38
	D55, 59, 60, 70, 72, 98, 99	SEL2710KLFM1	LED (yellow)	7
		CERAMIC OSCILLATOR		
	X1	EFOFC4004A3	4MHz	1
		SWITCHES		
		SSHG1030A	Switch, for Push Type	47
		SSSG1010A	Slide Switch, Transpose	1
		VARIABLE RESISTOR		
	VR1	EVD06425B24G	20KΩ B, Tempo Control	1
		RESISTORS		
		ERDS2TJ470	47Ω	12
		ERDS2TJ152	1.5KΩ	26
		ERDS2TJ222	2.2KΩ	1
		ERDS2TJ472	4.7KΩ	3
		ERDS2TJ103	10KΩ	5
		CAPACITORS		
		ECEA0JU470	47µF, 6.3V	1
		ECCR1H471J	○ 470PF	1
		ECKR1E473ZV	○ 0.047µF	1

■ LOWER CONTROL PANEL RIGHT CIRCUIT (CPSR)

	Ref. No.	Part No.	Description	Per/Set
		INTEGRATED CIRCUITS		
	IC1	MN15524PGP	1 chip 4 bit Microcomputer	1
	IC2	SVIGM53217	Hex Buffer	1
	IC3	SVIGTA61	Transistor Array	1
	IC4	MN1280R	Reset IC	1

Ref. No.	Part No.	Description	Per/Set
TRANSISTORS			
Q5, 6	2SC1047C		2
DIODES			
D2~24	MA165TA5		23
D25~28, 30~32, 35~43, 46, 47	SEL2210SLFM1	LED (red)	18
D29, 33, 34, 44, 45	SEL2710KLFM1	LED (yellow)	5
CERAMIC OSCILLATOR			
X1	EFOFC4004A3	4MHz	1
SWITCHES			
	SSHG1030A	Switch, for Push Type	23
RESISTORS			
	ERDS2TJ470	47Ω	6
	ERDS2TJ152	1.5KΩ	10
	ERDS2TJ222	2.2KΩ	1
	ERDS2TJ472	4.7KΩ	3
	ERDS2TJ103	10KΩ	5
CAPACITORS			
	ECEA0JU470	47µF, 6.3V	1
	ECCR1H471J	○ 470PF	1
	ECKR1E473ZV	○ 0.047µF	1

■ MUSICAL DISPLAY CIRCUIT (MD)

Ref. No.	Part No.	Description	Per/Set
TRANSISTORS			
Q1, 2	2SC2320LFG		2
DIODES			
D1	MA165TA5		1
RESISTORS			
	ERDS2TJ473	47KΩ	5
	ERDS2TJ105	1MΩ	2
CAPACITORS			
	ECEA1EK4R7	Ⓚ 4.7µF, 25V	1
	ECCR1H681J	○ 680PF	2
	ECKR1E473ZV	○ 0.047µF	1

■ MEMORY PACK CONTROL CIRCUIT (MPC)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	MN15621PGB	1 Chip 4 bit Microcomputer	1
TRANSISTORS			
Q1, 2, 7	2SC1047C		3
Q3, 5, 6, 9~11	2SC2320LFG		6
Q4	2SA1015GR		1
DIODES			
D1	MA165TA5		1
D2	MA1036H	Zener	1
COMPONENT COMBINATION			
Z1	EXATA223S	Noise Suppression Filter	1
CERAMIC OSCILLATOR			
X1	EFOA4R5M01A	4.5MHz	1
RESISTORS			
	ERDS2TJ222	2.2KΩ	1
	ERDS2TJ472	4.7KΩ	2
	ERDS2TJ103	10KΩ	3
	ERDS2TJ223	22KΩ	1
	ERDS2TJ823	82KΩ	1
⚠	ERD2FCG101	🄵 100Ω, 1/4W, Fuse Type	1
CAPACITORS			
	ECEA1EU470	47µF, 25V	1
	ECEA50ZR1	ⓩ 0.1µF, 50V	1
	ECCR1H330J	○ 33PF	1
	ECCR1H101J	○ 100PF	1
	ECCR1H471J	○ 470PF	1
	ECKR1E473ZV	○ 0.047µF	1

■ UPPER & LOWER KEYBOARD CIRCUIT (UKB & LKB)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUIT			
IC1	SVIGM74LS138	Decoder	1
DIODES			
D1~44	MA165TA5		44
COMPONENT COMBINATION			
Z1	EXATA223S	Noise Suppression Filter	1
SWITCHES			
	SSPG6001A	Rubber Switch (6 continuous)	5
	SSPG7001A	Rubber Switch (7 continuous)	2
CAPACITORS			
	ECEA0JU470	47µF, 6.3V	1
	ECKR1E473ZV	○ 0.047µF	1

■ PEDAL KEYBOARD CIRCUIT (PKB)

	Ref. No.	Part No.	Description	Per/Set
	DIODES			
S	D1~13, 15	MA162A		14
	SWITCH			
		SHGG50A	Rubber Switch (5 continuous)	3

■ JACK 1 CIRCUIT (JACK 1)

	Ref. No.	Part No.	Description	Per/Set
	INTEGRATED CIRCUITS			
	IC1	SVIGM5218L	Operational Amplifier	1
	IC2	SVIGM74LS09	Quadruple 2-Input AND Gate	1
	DIODES			
	D2~5	MA165TA5		4
	COIL			
	L2	SLQG13W6D1	13.5μH	1
	JACKS			
	JK1	SJJG450A	Headphones Jack	1
	JK2	SJJG210A	Mic Jack	1
	JK3	SJJG400A	AUX Jack	1
○	JK4	SJJG470A	Line Out Jack	1
	JK5	SJJG250A	Ext. I/O (FD)	1
	VARIABLE RESISTOR			
	VR1	EWHD5A576A54	50KΩ A, Mic Volume	1
	RESISTORS			
		ERDS2TJ681	680Ω	2
		ERDS2TJ102	1KΩ	3
		ERDS2TJ332	3.3KΩ	2
		ERDS2TJ472	4.7KΩ	1
		ERDS2TJ682	6.8KΩ	2
		ERDS2TJ103	10KΩ	2, 4 EZ
		ERDS2TJ683	68KΩ, Except for [EZ]	2
		ERDS2TJ154	150KΩ	1
		ERDS2TJ224	220KΩ	2
	EZ	ERDS2TJ334	330KΩ, [EZ] only	2
	⚠	ERD25FJ152	Ⓕ 1.5KΩ, 1/4W	2
	⚠	ERD50FJ681	Ⓕ 680Ω, 1/2W	2
	⚠	ERD2FCG100	🄵 10Ω, 1/4W, Fuse Type	2
	CAPACITORS			
		ECEA1EU470	47μF, 25V	2
		ECEA1HN010S	Ⓝ 1μF, 50V	2
	EZ	ECQM1H103KV	0.01μF, [EZ] only	1
		ECCR1H101J	○ 100PF	2
		ECKR1E473ZV	○ 0.047μF	1

■ JACK 2 CIRCUIT (JACK 2)

	Ref. No.	Part No.	Description	Per/Set
	INTEGRATED CIRCUITS			
	IC1	SVIGM74LS05	Hex Inverter	1
	IC2	SVIGTLP552	Photo Coupler	1
	DIODES			
	D1~7	MA165TA5		7
	JACKS			
	JK1, 2	SJSG1460A	MIDI In, MIDI Out	2
	RESISTORS			
		ERDS2TJ221	220Ω	3
		ERDS2TJ331	330Ω	1
		ERDS2TJ472	4.7KΩ	1
	CAPACITORS			
		ECKR1E473ZV	○ 0.047μF	3

■ NETWORK CIRCUIT (NW)

	Ref. No.	Part No.	Description	Per/Set
	COILS			
	L1	SLCSC471KU	0.47mH	1
	L2	SLCSC221KU	0.22mH	1
	CAPACITOR			
		ECEA50Y2R2	Ⓨ 2.2μF, 50V	1
		ECEA50Y4R7	Ⓨ 4.7μF, 50V	1

■ EXPRESSION CIRCUIT (EXP)

	Ref. No.	Part No.	Description	Per/Set
	Cds			
		SVEG5	Light Sensitive Device	1

■ FILTER 1 CIRCUIT (LF 1), [EZ] only

	Ref. No.	Part No.	Description	Per/Set
	COILS			
	L1	SLQG10W10D1	10μH	1
	L2	SLQG13W4D1	13.5μH	1

■ FILTER 2 CIRCUIT (LF 2), [EZ] only

	Ref. No.	Part No.	Description	Per/Set
	COILS			
	L1	SLQG13W4D1	13.5μH	1

■ POWER AMPLIFIER CIRCUIT (PA)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUIT			
○ IC1 ⚠	SVI3102	Power Amplifier	1
DIODES			
D2	MA4150M	Zener	1
D4, 6, 8, 10	SVDS3V20	Rectifier	4
RESISTORS			
	ERDS2TJ222	2.2KΩ	2
	ERDS2TJ682	6.8KΩ	1
	ERDS2TJ103	10KΩ	1
	ERDS2TJ223	22KΩ	4
	ERDS2TJ393	39KΩ	2
	ERDS2TJ154	150KΩ	1
⚠	ERD50FJ6R8	Ⓕ 6.8Ω, 1/2W	2
CAPACITORS			
	ECEA0JU470	47μF, 6.3V	2
	ECEA1CU330	33μF, 16V	1
	ECEA1HN010S	Ⓝ 1μF, 50V	2
	ECQG1H152KZ	(TF) 0.0015μF	2
	ECQM1H473KV	(TF) 0.047μF	2
	ECCR1H471J	○ 470PF	2
	ECKR1E473ZV	○ 0.047μF	2
	ECET50R332SW	3300μF, 50V	2
EZ ⚠	ECQE2A104MW	0.1μF, 250V, Across-the Line Capacitor, [EZ] only	1
FUSES			
F2, 3 ⚠ MC XT	XBA1F30NU14	3A, 125V, [MC][XT] only	2
F4, 5 ⚠	XBA2C31TB0	T3.15A, 250V	2
RESISTORS			
	ERDS2TJ101	100Ω	3
	ERDS2TJ331	330Ω	2
	ERDS2TJ102	1KΩ	1
	ERDS2TJ472	4.7KΩ	3
	ERDS2TJ682	6.8KΩ	1
	ERDS2TJ103	10KΩ	6
	ERDS2TJ223	22KΩ	2
	ERDS2TJ333	33KΩ	1
	ERDS2TJ473	47KΩ	3
	ERDS2TJ104	100KΩ	2
⚠	ERG1ANJ221	Ⓕ 220Ω, 1W	1
⚠	ERX2ANJR22	Ⓕ 0.22Ω, 2W	1
CAPACITORS			
	ECEA0JU102	1000μF, 6.3V	1
	ECEA1CU330	33μF, 16V	1
	ECEA1EU4R7	4.7μF, 25V	1
	ECEA1VU100	10μF, 35V	3
	ECEA1VU102	1000μF, 35V	1
	ECEA1VU222	2200μF, 35V	1
	ECEA1HU010	1μF, 50V	1
	ECEA1HU330	33μF, 50V	1
	ECQG1H152KZ	0.0015μF	1
	ECQG1H472KZ	0.0047μF	1
	ECQM1H103KV	0.01μF	1
	ECCR1H101J	○ 100PF	1
	ECCR1H681J	○ 680PF	1
	ECKR1E473ZV	○ 0.047μF	1

■ POWER SUPPLY CIRCUIT (PS)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	AN7815	Voltage Regulator	1
IC2	SVIGM51207L	Dual Comparator	1
○ IC3	AN7924F	Voltage Regulator	1
IC4	AN7915F	Voltage Regulator	1
TRANSISTORS			
Q1, 2, 7	2SC2320LFG		3
Q5	2SA933STRS		1
Q6	2SB953A		1
DIODES			
D1, 9	MA165TA5		2
D2, 3, 6, 7 ⚠	SVDGSM1A02LF	Rectifier	4
D4, 5 ⚠	SVDS2V20	Rectifier	2
D8	SVDGERC9102		1
COILS			
L1	SLCG2A121T		1
L1 EZ	SLCG2A121TZ	[EZ] only	1

■ AC POWER SUPPLY CIRCUIT (ACP)

Ref. No.	Part No.	Description	Per/Set
COILS			
L1 ⚠	SLTGLF3	Line Filter	1
L2 EZ	SLQG10W2D1	10μH, [EZ] only	1
FUSES			
F1 ⚠	XBA1F30NU14	3A, 125V, MC XT only	1
F1 ⚠	XBA2C31TB0	T3.15A, 250V } EK XS XL XR X XX XV only	1
F2, 3 ⚠	XBA2C16TB0	T1.6A, 250V } EK XS XL XR X XX XV only	2
F2 ⚠	XBA2C16TB0	T1.6A, 250V, other areas	1
CAPACITORS			
⚠	ECQU2A104MN	0.1μF, 250V	1
⚠	ECKCVA1472MF	○ 4700μF, 250V	1

■ OTHERS

	Ref. No.	Part No.	Description	Per/Set
	SWITCHES			
	⚠	ESB90712V	Power Switch	1
	EK XL ⚠ XR XS X XX XV	ESE3758	Voltage Selector, [EK][XL][XR][XS][X][XX] [XV] only	1
	TRANSFORMERS			
○	⚠	SLTG5P39	Power Transformer	1
○	MC XT ⚠	SLTG5P40	Power Transformer, [MC][XT] only	1
	SPEAKERS			
○		EAS30PL132E	30cm, 6Ω	1
○		EAS20PM223D	20cm, 6Ω	1
		EAS65PH71S	6.5cm, 6Ω	2
	LED, LAMP			
		LN29RP	LED (Power Indicator)	1
		XAMR55P	Expression Lamp	1
	AC CORDS, PLUG			
	⚠	SJAG24	AC Cord	1
	EK XS ⚠	SJAG25	AC Cord, [EK][XS] only	1
	MC XT ⚠	SJAG22	AC Cord, [MC][XT] only	1
	XL XR ⚠	SJAG23	AC Cord, [XL][XR] only	1
	⚠ X XX XV	SJP5213-1	Attachment Plug, [X][XX][XV] only	1

■ WIRING PARTS

	Ref. No.	Part No.	Description	Per/Set
		SWKG0368LSA	Connector with Wire	1
		SWKG0385LTA	Connector with Wire	1
		SWKG0497LSA	Connector with Wire	1
	EK XL XR XS X XX XV	SWKG0498LTA	Connector with Wire [EK][XL][XR][XS][X][XX] [XV] only	1
		SWKG04100LSA	Connector with Wire	1
		SWKG0656STA	Connector with Wire	1
		SWKG0684LTA	Connector with Wire	1
		SWKG0685LTA	Connector with Wire	1
		SWKG0692LSA	Connector with Wire	1
		SWKG0886LSA	Connector with Wire	1
		SWKG0887LSA	Connector with Wire	1
		SWKG1058ZA	Connector with Wire	1
		SWKG1331LSA	Connector with Wire	1
	EZ	SWKG04108ZA	Connector with Wire [EZ] only	1
	EZ	SWKG1042LSA	Connector with Wire	1
	EZ	SWKG1058ZB	Connector with Wire	1
	EZ	SWKG0480LSB	Connector with Wire	1
	EZ	SWEG460A	Wire	2
	EZ	SWEG580A	Wire	1

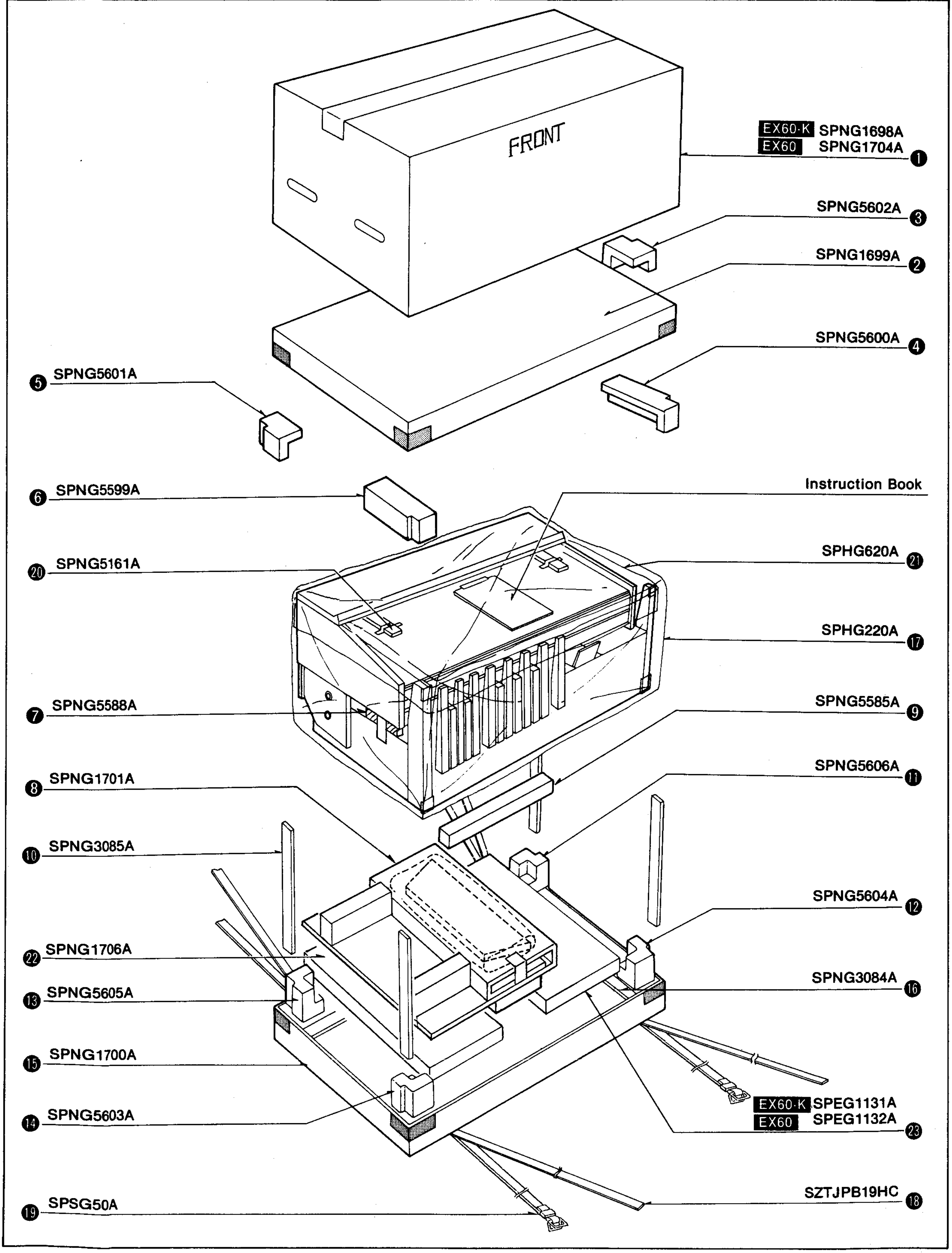
■ DIGITAL MEMORY PACK

	Ref. No.	Part No.	Description	Per/Set
	SY-P2			
		SXPG12241	Memory Pack P.C.B.	1
	IC1, 2	SVIGM512820R	16K bit CMOS Static RAM	2
	D1	MA165TA5	Diode	1
	Z1, 2	EXBEQ10104MM	Block Resistor, 100KΩ×10	2
	SW1, 2	SSSG1001A	Switch	2
	R1	ERDS2TJ103	Resistor, 10KΩ	1
	R2~4	ERDS2TJ472	Resistor, 4.7KΩ	3
	C1	ECSF35E1GE	Ⓣ Capacitor, 1μF, 35V	1
	SY-P3			
		SXPG12242	Memory Pack P.C.B.	1
	IC2	SVIG6264LP15	64K bit CMOS Static RAM	1
	D1	MA165TA5	Diode	1
	Z1	EXBEQ10104MM	Block Resistor, 100KΩ×10	1
	Z2	EXBEQ12104MM	Block Resistor, 100KΩ×12	1
	SW1, 2	SSSG1001A	Switch	2
	R1	ERDS2TJ103	Resistor, 10KΩ	1
	R2, 3	ERDS2TJ472	Resistor, 4.7KΩ	2
	C1	ECSF35E1GE	Ⓣ Capacitor, 1μF, 35V	1

■ PACKING PARTS

	Ref. No.	Part No.	Description	Per/Set
○	EX60·K	SPNGEX60EA	Packing Parts Ass'y	1
○	EX60	SPNGEX60EB	Packing Parts Ass'y	1
○	1 EX60·K	SPNG1698A	Carton Box	(1)
○	1 EX60	SPNG1704A	Carton Box	(1)
○	2	SPNG1699A	Top Case	(1)
○	3	SPNG5602A	Pad, Rear Right Side	(1)
○	4	SPNG5600A	Pad, Front Right Side	(1)
○	5	SPNG5601A	Pad, Rear Left Side	(1)
○	6	SPNG5599A	Pad, Front Left Side	(1)
	7	SPNG5588A	Spacer, for Cabinet	(2)
○	8	SPNG1701A	Packing Parts, Music Rack	(1)
	9	SPNG5585A	Spacer, for Bench	(1)
○	10	SPNG3085A	Prop	(4)
○	11	SPNG5606A	Pad, Rear Right Side	(1)
○	12	SPNG5604A	Pad, Front Right Side	(1)
○	13	SPNG5605A	Pad, Rear Left Side	(1)
○	14	SPNG5603A	Pad, Front Left Side	(1)
○	15	SPNG1700A	Bottom Case	(1)
○	16	SPNG3084A	Frame	(1)
	17	SPHG220A	Polyethylene Bag	(1)
	18	SZTJPB19HC	Band	(2)
	19	SPSG50A	Band, with Ring	(2)
	20	SPNG5161A	Spacer, for Top Cover	2
	21	SPHG620A	Protection Cover, for Cabinet	1
○	22	SPNG1706A	Packing Parts, for Side Panel	1
○	23 EX60·K	SPEG1131A	Packing Parts, for Bench	1
○	23 EX60	SPEG1132A	Packing Parts, for Bench	1

PACKING


FRONT
EX60·K SPNG1698A
EX60 SPNG1704A ①
SPNG5602A ③
SPNG1699A ②
SPNG5600A ④
⑤ SPNG5601A
⑥ SPNG5599A
Instruction Book
⑳ SPNG5161A
SPHG620A ㉑
SPHG220A ⑰
⑦ SPNG5588A
SPNG5585A ⑨
⑧ SPNG1701A
SPNG5606A ⑪
⑩ SPNG3085A
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⑬ SPNG5605A
SPNG3084A ⑯
⑮ SPNG1700A
EX60·K SPEG1131A
EX60 SPEG1132A ㉓
⑭ SPNG5603A
SZTJPB19HC ⑱
⑲ SPSG50A